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th ANNUAL CIO 100

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BY KIM S. NASH

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THE BUSINESS
VALUE BEHIND

BIG DATA

When organizations get to the point where their volume, velocity and variety of data exceed storage or computing capacity, there are some big challenges – but even bigger opportunities to achieve unprecedented business value. So, where do they turn when looking for optimal ways to gain insights from these larger data sets in shorter reporting windows? They turn to SAS®.

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VOLUME 25, NO. 15

August 1, 2012

25th ANNUAL CIO100

Risk Busters 30

COVER STORY When employees, customers or entire business plans are under threat, top CIOs fight back with innovative IT **BY KIM S. NASH**

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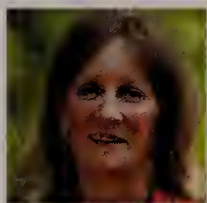
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FROM THE
EDITOR IN CHIEF

start

CHATTER

Outrunning Risk

What's the worst that can happen? Ever ask yourself that question?

Most of us have, at one time or another, taken a quick mental tour through the scariest scenarios we can imagine. We wonder what we would do, how we would cope. If we happen to be CIOs, we start working on a plan to head off that worst-case scenario before it unfolds.

That ability to envision risk and solve problems before they crop up was something we noticed again and again in our CIO 100 Award winners this year. "Squashing looming business risks stands out as a key theme among the winners," Senior Editor Kim S. Nash writes in our cover story ("Risk Busters," Page 30). "Many of this year's winning projects demonstrate how CIOs lead the way in changing how colleagues work, thereby mitigating profound risks to the company."

In some cases, IT made a life-and-death difference on oil rigs or fire trucks or in hospital emergency rooms. In others, we saw failing business models revived, corporate reputations saved, customer loyalty restored or competitive threats vanquished.

At Boeing, for example, CIO Kim Hammonds used IT to unclog a severe order backlog and boost production by 40 percent over the next three years. It was the largest IT project in company history, taking more than 500,000 man-hours and rolling out 35 new applications across global manufacturing, engineering, quality management and supply chain operations.

Yet you don't need to be the largest aerospace company in the world to see dramatic business results from innovative IT. At Christiana Care Health System, CIO Randy Gaboriault put interactive visualization software to work in an emergency department bogged down by pen-and-paper workflow processes. "Even if it's seconds of friction out of the process," he notes, "it speeds up the time between knowledge and action."

One expert quoted in our story makes the point that CIOs are in the best position to identify serious business risks because you see your companies as a collection of processes. That unique helicopter view gives you a greater responsibility to drive change, which is where innovation always starts.

Throughout this issue, which marks the 25th anniversary of our CIO 100 Awards, you'll find many stories about innovative projects and their IT champions. How I wish we could write about each one. Instead, I invite you to check out the full array of CIO 100 honorees in our sortable database online (www.cio.com/cio100/2012/1).

Maryfran Johnson, Editor in Chief, CIO Magazine & Events
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Handle Data with Care

Companies are using **big data** to improve sales, but they have to **collect customer information carefully**. Senior Online Writer Thor Olavsrud talked with Dan Kohn, marketing VP at Pitney Bowes, who says companies should form **long-term relationships** with customers and notes that every interaction is a chance to either **build trust** or wreck it. Consumers are willing to give out their data in return for something from the company, he says. Olavsrud writes that it's a **delicate balance** to figure out when to ask for data and how much.
www.cio.com/article/708631

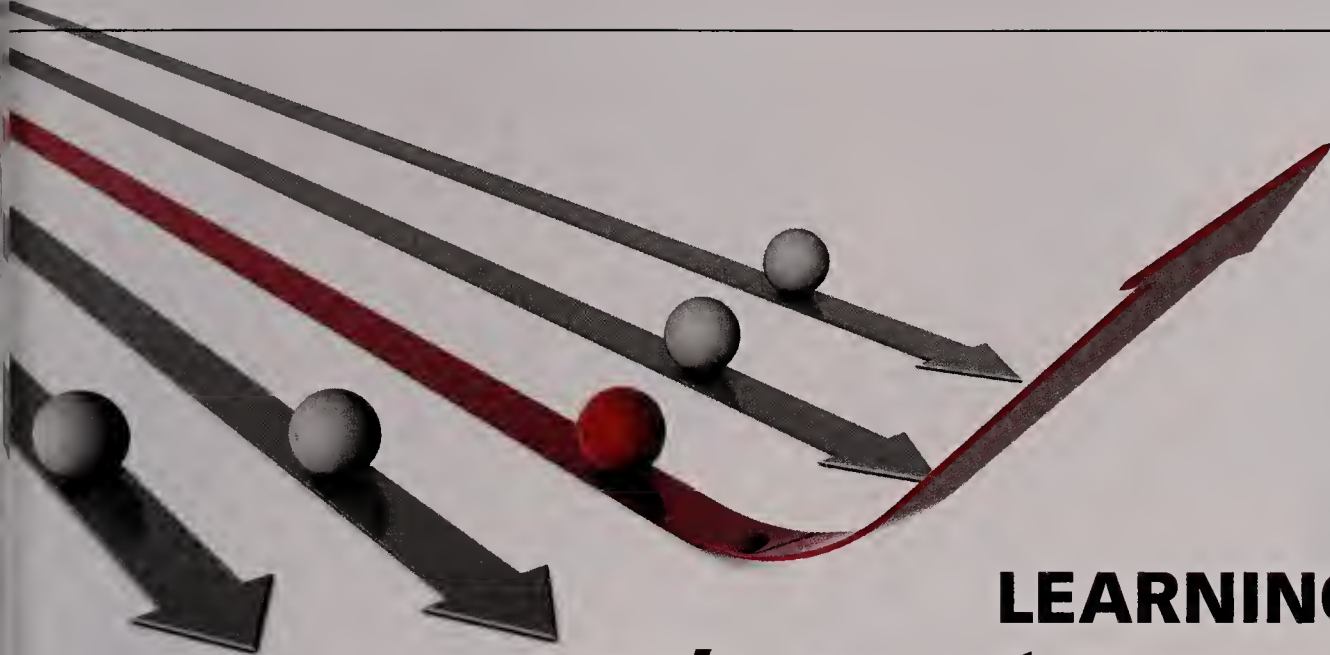
Succeeding Socially

Senior Online Writer Kristin Burnham interviewed the head of internal communications at SAS, who adopted **Socialcast**, an enterprise collaboration platform, to give employees **an easier way** to navigate the **corporate intranet** and prevent them from using **Facebook for work**. The business analytics company now has more than **8,500 users** on Socialcast, which is about **67 percent** of its employees worldwide.
www.cio.com/article/706760

Microsoft Tablet Surfaces

Microsoft announced the debut of **Surface**, a Windows tablet that is designed to work as **a tablet and a PC**. The Surface has a **kickstand on the back** to prop it up, a Touch Cover that acts as a **screen protector** and a **functional keyboard**. Assistant Managing Editor Shane O'Neill says it is a **bold move** for Microsoft, since the company is the first to make such a device. Microsoft hasn't revealed when it will be released, but since the device is expected to run **Windows 8**, don't expect it before fall. blogs.cio.com/node/17174

Compiled by Editorial Assistant Lauren Brousell. Have a comment about a story in this issue? Go to www.cio.com/issue/20120801 or write to letters@cio.com.



LEARNING TO COMPETE: IT's Next Transformation

■ ■ ■ ■ ■ ■ ■ ■ ■ ■
Services are the key to the new CIO IT mindset. What does the business need today? Can you deliver services quickly and effectively?

Management experts have been talking for years about how CIOs must shift their thinking to become more competitive. IT professionals know the business well enough to play a pivotal role in the selection and brokering of external services that will provide the best value. But unsanctioned IT procurement—the increasingly common practice among business users to seek services outside the organization, from such sources as Google, Dropbox and Amazon—brings potentially serious consequences for security, compliance and control. To restore some sense of order, IT needs to evolve from support and development roles to focus on the delivery of business-driving services. So how do CIOs shift thinking, deliverables and processes accordingly?

Understanding this new model for competitive IT requires actionable advice on how to change the IT mind-set, develop processes for services delivery, redesign the IT organization and adapt leadership skills appropriately.

The first lesson for IT organizations is to abandon lengthy approval processes and to align efforts for speed and agility. CIOs and their teams continually need to ask: What does the business need today, and how can we get it to them quickly and effectively?

What's more, CIOs must lead the effort to reorganize IT to provide attractive, easy-to-consume services that business users demand. Part of this work involves anticipating what the business will need in the months and years ahead.

Adopting a competitive IT mind-set also entails reworking operations and processes. Instead of managing infrastructure and projects, IT's primary role is to package, price, bundle and sell the services it offers. An IT services catalog gives internal users a clear understanding of what they're buying, how much it will cost and the intended benefits. The new IT model is built around delivering attractive, standardized services; examples include a remote-office bundle service or an iPad set-up service.

Reshaping the IT organization starts from the top. The CIO's job is to lead internal IT staff in the new vision, develop new types of relationships with business stakeholders based on a customer/vendor model, and develop financial expertise related to pricing variably consumed services and measuring return.

Reorganizing IT staff into service-oriented functions is critical, as well, including sales and marketing, financial management and cloud architecture. In many cases, technology specialists will need to become generalists with broader knowledge across the IT spectrum.

To help demonstrate this approach, EMC and CIO magazine have created an exclusive white paper that offers CIOs a practical guide based on EMC's own multiphase IT transformation journey.



EMC²

To read the entire story, view video interviews and see how you measure up against your peers on this topic, please visit www.emc.com/cio/it-transformation



FROM THE **CEO**

Winning Ways

Business is a competitive sport, so every day there are winners and losers. Yet what I find so interesting is that there are so many routes to business success—from culture, innovation and leadership to process, financials and technology. You can succeed by excelling in one or more of these core disciplines, but winning happens when all of them are woven together.

Among this year's CIO 100 award winners (see full list, Page 40), I see many examples of CIOs and IT organizations not just succeeding at business, but winning. Their ability to innovate and operate simultaneously is simply awe-inspiring. The business transformations they've led serve as a model we can all learn from and would do well to emulate.

CIOs like Rob Carter of FedEx, Kim Hammonds of Boeing, David Kline of Viacom and Wayne Shurts of Supervalu exemplify the kind of winning leadership that drives business success. I invite you to come and listen firsthand to their stories (and many others) on stage this month at our CIO 100 Symposium, August 19-21 at the Terranea Resort in Rancho Palos Verdes, Calif.

I thought of our newest class of CIO 100 winners—the 25th class in this magazine's history—as I was reading "The C-Suite Challenges IT: New Expectations for Business Value." Written by the Economist Intelligence Unit and sponsored by Dell Services, this recent survey of 536 C-suite executives took an in-depth look at the challenges facing companies as they make IT, business, strategy and purchasing decisions to move their companies forward. Here are a few of the highlights I took special note of:

- Nearly six in ten (57 percent) respondents expect their IT function to change significantly in the next three years; 12 percent predict a "complete overhaul."

- CEOs who involve their CIOs in setting business strategy and leveraging innovative IT outperform their peers financially—by a margin of nearly 2:1.

- While using IT to cut costs is still popular (38 percent), there is significant interest (22 percent) in leveraging IT to develop new products and services.

These findings certainly reflect our challenging business climate, but they also underscore the impressive accomplishments of our CIO 100 winners. Congratulations to you all.

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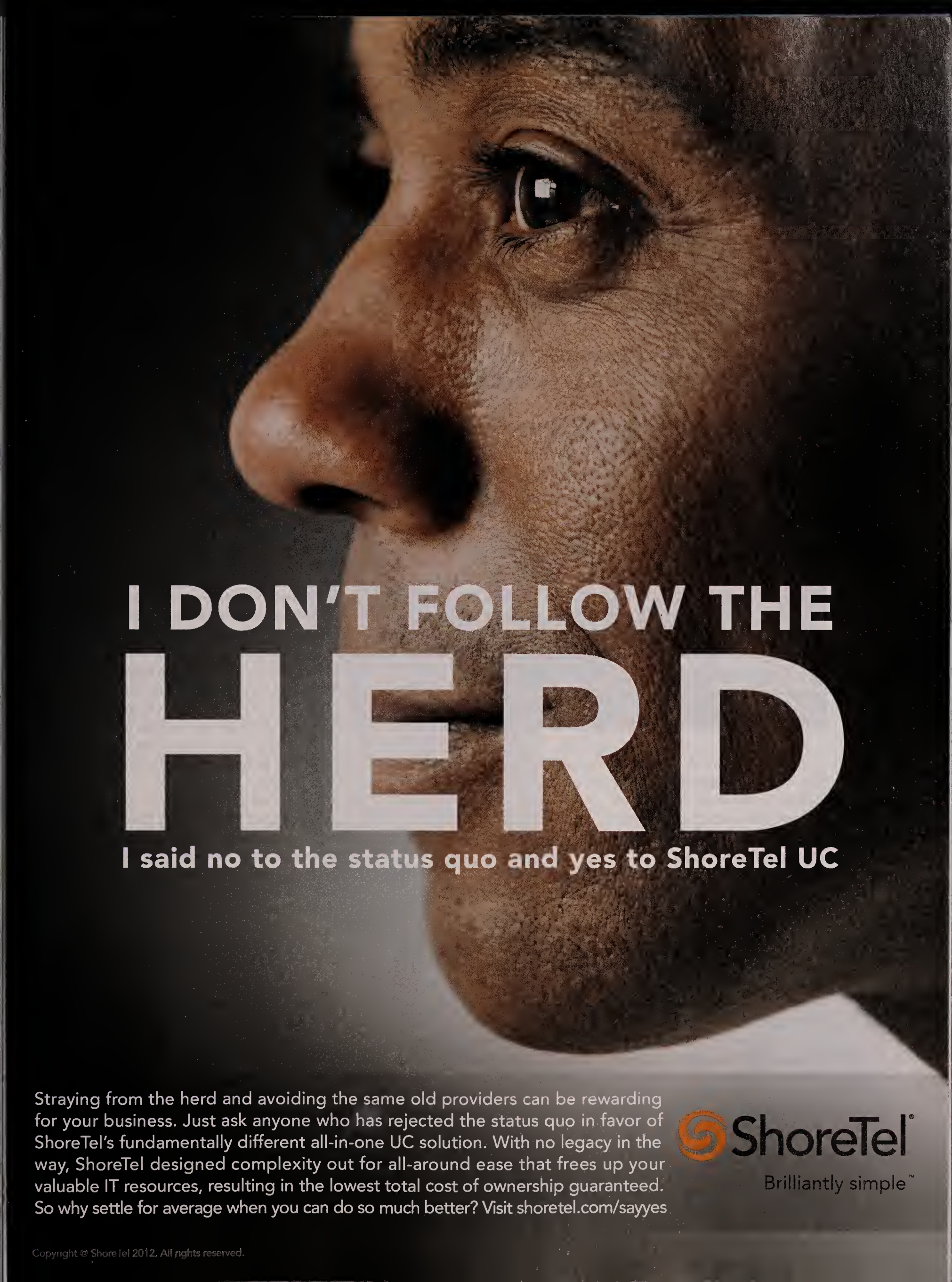


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I DON'T FOLLOW THE HERD

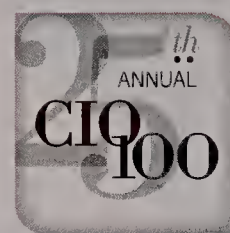
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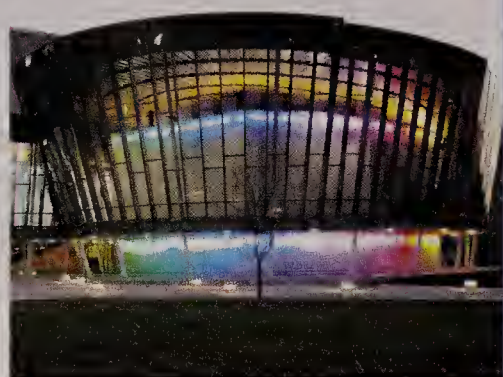
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High-Tech Magnet

One university's all-digital building attracts IT students and prospective employers **BY LAUREN BROUSELL**



When Northern Kentucky University wanted to better prepare students in its college of informatics for their eventual real-world careers, it considered everything, down to the building where their education took place.



“Giving students this applied experience is like a living lab for them.”

— Tim Ferguson,
CIO, Northern Kentucky University

Griffin Hall, which opened in May of 2011 and won the school a 2012 CIO 100 award, doubles as a practical technology lab and meeting place for virtual co-ops with potential employers. According to NKU's CIO Tim Ferguson, the building was designed to get more students interested in informatics and to erase the perception that IT's job opportunities are nonexistent or unattractive.

“If you look around the country at higher ed, a lot of tech programs are being eliminated,” he says. “Ours is booming, with record enrollment.”

To capitalize on this interest, the quality of the technology in the classrooms had to match that of the programs being offered. Ferguson says the school's curriculum was already making an effort to bring the latest technology straight to its students, but it had reached a point where facilities needed to catch up.

“There are five areas we really are focused on: cloud, analytics and big data, info security, social, [and] mobile and journalism linked together,” says Ferguson.

“It's really an education for the 21st century, and the building makes that all come to life.”

NKU's \$54 million Griffin Hall is digital throughout and sits on an intelligent building system, which manages utilities such as lighting, water and the HVAC system right on the university's network. Data from the building is collected and stored, and can be analyzed later by students. “Giving students this applied experience is like a living lab for them,” Ferguson says.

All 32 classrooms have digital presentation capabilities that record lectures so students can review them later on their own devices. But Ferguson says the crown jewel of Griffin

Hall is its large, digitally enabled auditorium that boasts a computer simulation center and provides a venue for seminars and entrepreneurial activities.

This “digitarium” has helped NKU make Griffin Hall a hub for the business community on campus. Over 150 local companies have hired students for virtual co-ops, bringing in software-development or R&D projects and allowing students to complete the work on site.

Jim Scott, CIO of Knowledge Works, a nonprofit foundation focusing on secondary education, is among those taking advantage of the program. He's employed NKU students to help with software development.

“I put the business requirements together, hand it off, and they build it for me,” he says. “I've offshored, I've outsourced and been CTO for Fortune 25 companies. This is the coolest model I've ever worked with.”

For Scott, the work is significantly cheaper and more flexible than offshoring. For students, it provides not just pay but valuable work experience and the potential for a future job. Scott just hired an NKU grad who participated in a co-op job.

Ferguson says informatics at Griffin Hall has become quite competitive and the school plans to use the program as a recruiting tool. “We take the cream of the crop.”

Contact Editorial Assistant Lauren Brousell at lbrousell@cio.com. Follow her on Twitter: twitter.com/lbrousell.

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I Can't Quit You

Three steps to becoming a manager no one wants to leave

1 Show up. Newer managers in particular tend to struggle with the transition to leadership. Don't forget to invest time in engaging with staff, and not just through task management.

2 Delegate to develop staff. Let staff know you care about career development. Your time is much better spent mentoring your employees to acquire new skills than doing such work yourself.

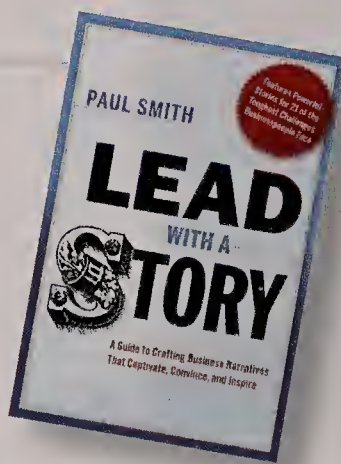
3 Create accountability. Employees expect to be fairly and consistently held accountable for their performance. Create compelling consequences for both positive and negative performance metrics and hold all team members to the same standards.

-Bob Kantor



For more tips, see: www.cio.com/article/708802

WORTH READING



BOOK Lead with a Story By Paul Smith

Telling tales from life can help leaders connect with employees and customers and can even solve tough leadership challenges. Need proof? Smith interviewed over 75 people, from small-business owners to big-name CEOs, and compiled 125 lessons learned from personal experiences. *Amacom*, \$24.95

quick FIX



How do I foster a culture that supports innovation?

ALWAYS recognize that IT's culture is your responsibility, and innovation is an outcome of the culture. Your division's culture forges either a team with positive social chemistry and a supportive environment or, in the case of many large corporations, a group of downbeat workers whose chances for bonding have been bled away. Once you've established a supportive environment, you should mix people with different points of view and thinking styles to stimulate everyone's creativity. Also be sure to nurture people with deep institutional experience. Friendly interactions can connect many different threads of knowledge in new ways, which Steve Jobs once said is the key to creativity. Research has also shown that laughter and humor are great aids to creativity and therefore innovation. Encourage people to have fun.

SOMETIMES work outside the office to find a quiet setting in which to think. The office's frenetic pace can cut into thinking time and stifle innovation. Albert Einstein found time to think by taking long walks alone to refine his theories. If you study big breakthroughs, you often find that inventors had quiet and time alone so they could think.

NEVER build a culture of blame. Innovation is often about trying and failing. If failure leads to blame, you'll create an innovation short-circuit. It's been well documented that antisocial behaviors trigger a person's threat sensor, putting the body on high alert and physically cutting off higher-order cognitive processes.

Frank Wander is founder and CEO of the IT Excellence Institute and a former Fortune 250 CIO. His business helps companies build high-performing IT organizations.

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VIEWPOINT



Anthony Deighton

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As Chief Technology Officer and Senior Vice President, Products, Anthony is responsible for guiding product strategy and leading all aspects of the company's R&D efforts. Since joining in 2005, Anthony has played a critical role in evolving and driving QlikView's product evolution to maximize the potential of business user-driven BI. Anthony holds a B.A. in Economics from Northwestern University and an M.B.A. with high distinction from Harvard Business School.

FOR MORE INFORMATION

on the new generation of the QlikView Business Discovery platform, download "The Vision For QlikView.next" at www.cio.com/whitepapers/qlikview

QlikView



Custom Solutions Group

"Tectonic Shift" Shakes Up BI Software Market

When QlikTech CTO Anthony Deighton mentions "IT consumerization," he recognizes how profoundly disruptive it can be to existing business models and processes. We recently asked him about what he calls a "tectonic shift" in the global business intelligence (BI) software market.

What are some of the ways "consumerization" is changing the BI marketplace?

The world is increasingly being driven not only by technology but also by our expectations of how technology works. We expect to be mobile, have access to our data anywhere and share our information via social networks. We download apps to help manage our everyday lives—apps that store our grocery lists and enable us to access our bank accounts and track the weather.

These trends are influencing the BI software market as well. For example, a company such as Illes Foods, a seasonings and spices supplier whose sales team needs to create custom recipes for customers in the field, uses a mobile BI solution accessible on the iPad and shares real-time data with headquarters via a QlikView app.

How does "business discovery" differ from traditional BI?

Business discovery is user-driven. It puts information in the hands of any user—without routing through IT—by making data not just accessible but also easy to understand and share. It is a social process that gives workgroups, teams and entire departments access to their information for better decision-making.

Why does IT tend to favor traditional BI vendors and a report-centric approach whereas business and departmental users are more attracted to business discovery solutions?

Traditional BI systems are too complex for business users, but business discovery is intuitive and easy to use, so solutions can be quickly tailored to fit users' needs. For IT, it saves time and resources, so it can focus on security, data governance and data quality.

How does a business discovery platform apply to big data?

Increasingly, we must efficiently access, filter and analyze massive amounts of data. Business discovery enables users to navigate and interact with big data however they want to, to find what's relevant to them and get answers to their business questions without specialized skills. Business users can run queries with data sets containing billions of rows and remix and reassemble data in new views and visualizations. They can quickly and easily gain insights for making business decisions.

Please explain how business discovery tools can deliver an "associative experience" for unexpected insights.

QlikView's associative search frees users to see data relationships while clicking. Traditional BI tools require predefined data paths, locking users into predetermined analytical paths. Associative search shows not only data included in ("associated with") users' selections but also excluded or hidden data. Often real insight is found in this previously hidden data.

A QlikView customer, Beckett Associates, the largest North American distributor of trading cards, realized that its inventory management system was costing it money because it couldn't see all the accruing unused merchandise. QlikView gave it better business processes for reporting, meaning better inventory management and less unused merchandise.

Several research firms have pointed to the increasing importance of visualization-based discovery tools for solving business problems. Why is that?

The more you know, the more effectively you can make business decisions and improve internal business processes. Firms realize that the key to solving business problems is optimal transparency of their data, with comprehensive visualization. We've been astounded by the changes our customers have made internally by simply using their data to discover what wasn't working and then making more-informed decisions. It has saved some of them millions of dollars.



Thermo Fisher Scientific's CIO **Ina Kamenz** says the company's new analytics tool allowed it to make immediate improvements in how customers were served.

11

Pledging Allegiance

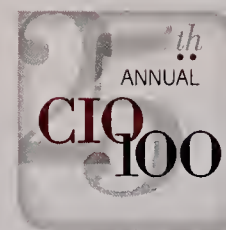
Thermo Fisher creates an innovative analytics tool to track and improve customer satisfaction **BY KIM S. NASH**

CIOs who look toward the future know they must gain expertise in creating lasting, mutually satisfying relationships between their companies and their customers. Among the winners of our 2012 CIO 100 awards, Thermo Fisher Scientific stands out for a project that does just that.

Thermo Fisher, a scientific equipment manufacturer with \$11.7 billion in sales last year, is trying to become a company that's easy to do business with, says CIO Ina Kamenz, whether you're buying a high-end industrial centrifuge or a case of glass pipettes.

Kamenz says Thermo Fisher can be perceived as complex, having made over 50 major acquisitions in five years. "The risk is [that] customers don't like to do business with you," she says.

The company's main method of measuring customer satisfaction was too simplistic, merely asking, "Would you recommend us to a friend or colleague?" So three years ago, the IT group and some non-IT colleagues began to come up with ways to get more telling feedback from custom- ▶▶



►►► **Analytics** Continued from Page 11

ers. The company built an analytics system for calculating a Customer Allegiance Score, or CAS, based on answers to a brief survey sent to customers within 48 hours of one of seven types of interactions, such as order fulfillment or technical support. The system, which runs in the cloud, gives Thermo Fisher continuous feedback to guide how employees behave with customers, she says.

"It's a great use of enterprise technology to create a better connection with customers," says CIO 100 judge Martha Heller, an executive recruiter and *CIO* columnist.

Because selling a mass spectrometer to a research laboratory differs from selling a serum to a pharmaceutical startup, the CAS system must collect information from a number of Thermo Fisher businesses, which don't all gather the same data. So IT built a tool called CAS Prime, based on Microsoft's .Net, that works with various ERP, CRM, sales and call center applications and creates XML files that can be cleaned up to remove data errors and duplications.

The CAS is also used to accelerate global growth. For example, the company wants to expand in Asia, where scientific research is well-funded and widespread. Carefully studying CAS results reveals how Thermo Fisher can satisfy local customers. "You're learning what you're doing, can improve immediately and continue to grow," Kamenz says.

In Japan, for example, CAS surveys revealed that customers of high-end scientific equipment wanted to be notified of even small changes to their orders, even if they didn't affect the final product. When Thermo Fisher changed the workflow process to include sending alerts about manufacturing changes, allegiance scores climbed 20 points, Kamenz says.

The CAS project achieved full ROI within six months of being deployed and continues to grow. Customers share more information in surveys as trust builds between them and the company. "The more you fix the problems customers bring up, the more they tell you."

"The more you fix the problems, the more they tell you."

—Ina Kamenz, CIO,
Thermo Fisher Scientific

Senior Editor Kim S. Nash can be reached at knash@cio.com. Read her Strategic CIO blog at <http://blogs.cio.com/blog/strategic-cio>.

crunch

What CEOs Want (**Right Now**)

Where should you focus your business intelligence resources? CEOs want useful, real-time insights about customers as individuals (not averages).

CEOs are investing in the following initiatives:



SOURCE: IBM SURVEY OF 1,709 CEOs WORLDWIDE, MAY 2012; MULTIPLE RESPONSES ALLOWED

Banks Facing Mobile Threat

U.S. financial institutions face a serious competitive threat from the rise of mobile wallet payment apps, according to a study by consulting firm Carlisle and Gallagher.

A mobile wallet is a smartphone app that supports multiple payment options, including credit cards. Google Wallet is the best-known mobile wallet, but PayPal and Apple are expected to launch wallet apps, too.

Nearly half of the 605 consumers Carlisle and Gallagher polled expressed an interest in adopting a mobile wallet. Of those, eight of 10 would consider using PayPal, Google or Apple as a primary provider of financial services, including banking and credit cards.

The results are a powerful call to action for brick-and-mortar financial institutions, says consultant Peter Olynick. Consumers may not simply walk away from their banks as they adopt mobile wallets, but the technology will likely erode the banks' relationship with their customers, he says.

Peter Wannemacher, an analyst at Forrester Research, agrees. He says banks "risk ending up as back-end funding sources for mobile wallets and payment products owned by other brands."

—Cameron Scott

...**10%** Tablet owners who watch video on the device every day. comScore ...**18%** Young adults interested in an IT career. CompTIA ...**30%** U.S. small businesses created in the past 20 years that are owned by immigrants. Fiscal Policy Institute

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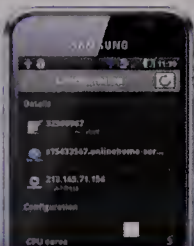
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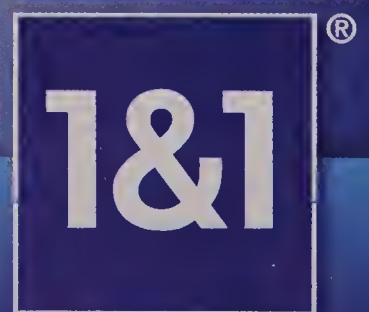
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CIO = Chief Integration Officer

It's time to capitalize on the power of making connections between organizational silos and key stakeholders **BY JACK BERGSTRAND**

One key skill that truly great CIOs have learned is how to successfully navigate and integrate organizational differences to keep key stakeholders in agreement and heading in the same direction. In other words, they become chief integration officers. It's a skill that can turn disorganized IT organizations into strategic weapons.

When IT functions began decades ago, they were somewhat self-contained and isolated. Today, the reverse is true. Now everyone needs IT, including customers, partners, suppliers, internal corporate functions and field operations.

Yet only the best CIOs have so far successfully led the charge for organizational integration. When CIOs let someone else lead this integration, it often spells disaster for them and their departments because it perpetuates the perception that business-IT alignment remains a problem.

Leading organizational integration and turning it into a personal and functional advantage isn't hard, but it does require practice. To succeed, you must master these three key skills.

1. Don't look at the company through an IT lens.

Rather, look at IT through a business lens. Start by internalizing your company's strategy, learning how key people are measured, and identifying the areas where the business is under the most competitive pressure. After you've gathered this important information, then you can think about the role of technology.

Success requires CIOs to make the transition from being merely good managers to being good leaders. Legendary author, consultant and educator Peter Drucker wrote that management is about doing things right, but leadership is about doing the right things. This insight is what makes the best CIOs better than the rest.

2. Avoid acronyms.

You can spot the best CIOs by

how they communicate. Every function and business has its acronyms, but the best CIOs don't constantly use these secret codes, because they understand that it makes them look out of touch to people outside IT.

Business transformation and organizational integra-

tion require that CIOs become the corporate Rosetta Stone. This means using plain English—avoiding not only IT acronyms, but also every other acronym that surfaces during discussions about integrated solutions.

3. Take an interest in people.

When it comes to organizational integration, the main issue usually isn't technology, it's people. When you're trying to get stakeholders on same path, you must remember that people won't care what

you know until they know that you care.

Being able to successfully connect with people on a personal level—or at least have the wisdom to avoid making interactions with difficult people any more difficult—is critical for success. Having empathy and a positive emotional connection with key stakeholders is the social lubricant needed to be a great CIO. Below-average CIOs fail to give this skill the high priority it deserves.

Looked at another way, great CIOs are great consultants. They seek to understand business issues, provide objective advice and make personal connections by caring about people as individuals and empathizing with their situations.

Becoming your company's chief integration officer requires practice, patience and persistence. But the result is greater success, less frustration and more fun—for you, your people and your company.

Jack Bergstrand is founder and CEO of Brand Velocity, a consultancy that focuses on business transformation. He is a former CIO and CFO at Coca-Cola and author of *Reinvent Your Enterprise*. Contact him at jb@brandvelocity.com.

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Saving Brick-and-Mortar Shopping

Big Blue tests out augmented reality as an Amazon-fighting sales tool

BY JOAB JACKSON

IBM Retailers are testing a prototype mobile app that can be used to learn more about products and their buyers. If implemented, the technology, designed by IBM, could be one of the first commercial uses of augmented reality (AR).

"This is a neat way of providing customers with [what] they would normally [research] on the Web," says Jill Puleri, IBM retail vice president. "It's also a way for a retailer to target and change behavior, and get some cross-selling and upselling going with consumers."

AR is when a person's real-world view is overlaid with computer-generated information. Televised football games, for instance, use computer graphics to highlight the first-down line. AR can also be implemented in headsets or a smartphone's camera viewfinder.

The idea behind the app is that it will allow shoppers to research items without having to leave the store to further investigate products on the Internet, which increases the likelihood that they will buy the product online.

To use the app, a shopper aims their smartphone's camera at a product, and the app's image-processing abilities identify what they're looking at, much like how QR codes work. Once the item is identified, the app allows information such as ingredients, specifications, price, reviews and discount codes to be downloaded from the physical retailer, rather than an online vendor.

Theoretically, this would help the retailer improve customer service by providing coupons or offering resources tailored to the individual.

IBM also provides tools that let

retailers analyze data about shoppers. "We have found consumers have an open mind about sharing information if they get something of value back," says Puleri.

IBM has not discussed when it would sell the software package, which could be a large market for them. In-store shopping still accounts for more than 92 percent of all retail volume, according to Forrester Research.

The company also has no plans to release the mobile app as a stand-alone technology or use it as part of a retail-wide standard. This solutions-based approach "gives the customer the first right to market. It will give them a competitive advantage," Puleri says.

Joab Jackson covers enterprise software for IDG News Service.

Smaller-Screen iPad Could Disrupt Tablet Market

ANALYSIS An Apple iPad with a smaller screen, if released, could force buyers to make some tough decisions and slow the momentum of the current 9.7-inch iPad and a number of Android devices with 7-inch and 8-inch screens, analysts say.

Apple launched the iPad in 2010, and the company originally dismissed the idea of a 7-inch tablet, saying the screen was too small. But things may have changed since the release of the Kindle Fire, which was relatively successful, and the Nexus 7, says Frank Gillett, analyst at Forrester Research.

"Having something you can hold in one hand seems to matter to some people and may matter in emerging markets," says Gillett.

—Agam Shah

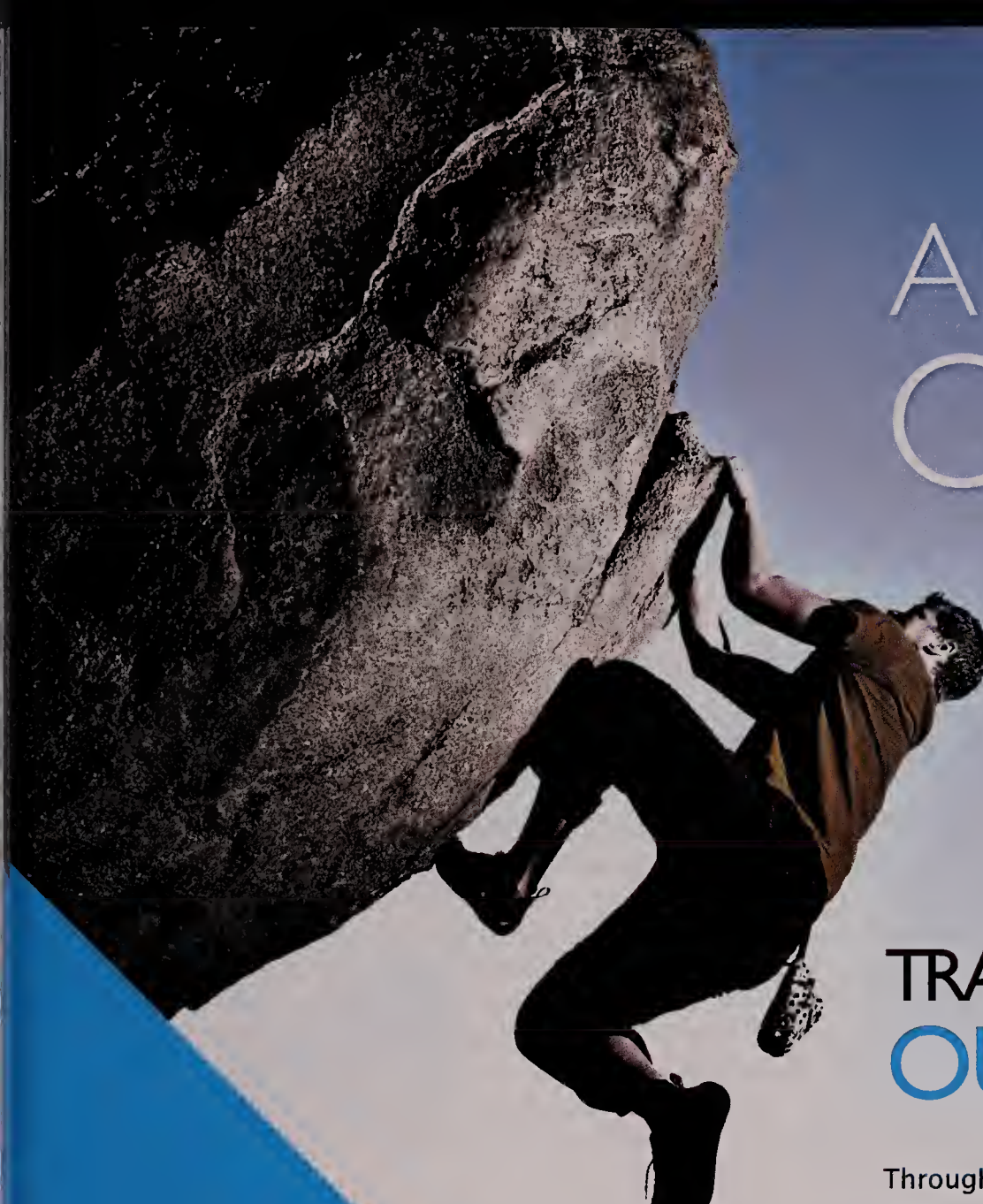
Students Develop Spray-On Battery

INNOVATION Researchers at Rice University have developed a prototype spray-on battery that could allow engineers to rethink the way portable electronics are designed.

The rechargeable battery boasts similar electrical characteristics to the lithium ion batteries that power most mobile gadgets, but can be applied in layers to almost any surface using a conventional airbrush, says Rice University graduate student Neelam Singh, who led the team working on the technology. Because current lithium ion batteries cannot easily be shaped, they sometimes restrict designers, particularly when it comes to small gadgets with curved surfaces. But the spray-on prototypes could change that.

"Today, we only have a few form factors of batteries, but this battery can be fabricated to fill the space available," says Singh. In one experiment, the team airbrushed bathroom tiles that could power LED lights.

—Martyn Williams



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Private Cloud to the Rescue

Applied Materials relieves engineer angst by virtualizing 3-D design software **BY STEPHANIE OVERBY**

When you're a global, engineering-driven firm in a competitive industry, the last thing you want is a group of 2,200 ticked-off designers. But that's what Applied Materials' CIO faced a few years ago.

The \$10.5 billion maker of semiconductors and solar power cell equipment had moved to a fully integrated product lifecycle environment to streamline its engineering operations.

But users said the new 3-D computer-aided design (CAD) systems made their jobs harder. They emailed the CEO about data integrity issues, complained about long load times, and some left the company altogether, calling out poor software performance in their exit interviews. According to one design leader, engineers were losing 30 percent of their productivity.

"We had to stop the pain," says CIO Jay Kerley. He had two options—blow up existing business processes or blow up IT infrastructure. "Changing the business processes for the whole company ▶▶▶



To improve the performance of 3-D design software, **Jay Kerley**, CIO of Applied Materials, moved the program's systems to a centralized private cloud closer to the data it accessed.

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Securing Your Journey to the Cloud

*Technavio Insights Report, Global Cloud Security Software Market 2010-2014

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would have been a much tougher row to walk," says Oran Davis, managing director of processes, methodologies and tools, including global product lifecycle management.

The plan IT devised—move the CAD systems to a private cloud—was risky. Theoretically, it could provide everything engineering needed—reduced complexity and errors, improved cycle times, and real-time collaboration. But "we couldn't find anyone who had done this before," says Kerley. "We found pieces of infrastructure capabilities that would allow us to provide the private cloud, but we had to do a lot of work to operationalize it."

Applied Materials' solution, which won it a 2012 CIO 100 award, was achieved by boosting engineers' computing power, reducing latency to the data stores and having IT consolidate the five terabytes of engineering data into three data centers, storing the huge CAD files on top-of-the-line network-attached storage and SAN servers. When it's time to work, users connect to one of the more than 1,000 CAD blade workstations with multi-core processors that also reside in the data center. To further improve speed and function, synchronization links were reduced from 10 to three, with data syncing between sites every two hours.

The engineers were skeptical. "They said, 'I need access to this information in real time and you're going to take this data off of my machine?'" says Kerley. "We had to prove this to them every step of way."

It was a long, phased implementation. Davis monitored transactions and workloads and reported the performance improvements to the designers. Application response time improved 200 percent, variance in response time was 50 times better, and synchronization failures fell 90 percent. The private cloud enabled an additional 500-plus hours of productivity each month, which more than paid for the project in the first year.

There are drawbacks. "The energy pull and requirements are significant," says Kerley. IT support staff also had to learn new skills. But he says the relief for engineering outweighed temporary IT pain. Today, 2,000 engineers access CAD apps via the cloud, and the rollout continues. Engineers' satisfaction with IT jumped from 43 percent to 79 percent. And no designers had to alter the way they worked. The only change was a new application window on their desktops. "Our mantra was that we would supply an environment patently identical to the one they were used to," says Davis.

That, it turned out, was the right decision. Kerley now takes calls from other companies with large engineering teams who struggled to rework their global business processes. "They're still not happy," Kerley says.

Stephanie Overby is a freelance writer based in Massachusetts.

Things You Need to Know

SOCIAL ANALYTICS

1 IT'S BECOME BIG BUSINESS. Sites like Facebook and Twitter help companies market new products and services, but they also allow customers to share gripes with an audience of millions. A rash of vendors have emerged with tools, usually cloud-based, that can track, collect, analyze and respond to conversations on social sites. These products are crucial to companies that want to understand how they're perceived online, according to Forrester Research analyst Zach Hofer-Shall. "The social Web is simply too big, too fast, and too full of irrelevance and spam to manage alone," Hofer-Shall wrote in a recent report.

2 THE MARKET HAS MATURED. Salesforce.com's Radian6 division started as an independent vendor in 2006, says Rob Begg, vice president of marketing for Radian6. Back then, "it was about getting the most [social] content the quickest," and the main goals were PR and brand marketing, he says. As the technology progressed, Begg says social listening moved toward gaining deeper insights about customers, thanks to advances in natural language processing and other technical areas.

3 IT'S A TRICKY TIME TO BUY. "Businesses evaluating the listening platform market have a tough task ahead," Hofer-Shall wrote in his report. "Differentiating among vendors in the crowded landscape can be difficult." A rash of recent mergers and acquisitions hasn't helped matters, and recently large analytics vendors such as IBM and SAS Institute have rolled out social data-themed products, Hofer-Shall added.

4 CIOs ARE NOT LEADING THE WAY. Radian6 deals primarily with marketing and customer service-related executives during sales cycles, Begg says. But CIOs should consider getting out in front of a social media initiative at their companies, says Jeremy Epstein, vice president of marketing at Sprinklr, a Radian6 competitor. "There's a really exciting opportunity to be a source of innovation." In addition, social analytics may affect a company's service operations, legal department, human resources and other areas of concern to CIOs, he says.

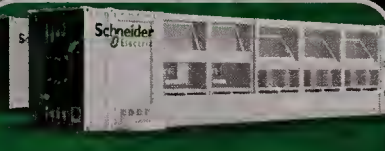
5 IT'S NOT JUST FOR MARKETING. Associate professor Jason Thatcher had Clemson University students use the school's new social media command center in his business class to track the currency exchange market and create a trading algorithm that spots significant selling or buying trends. He thinks social analytics has broad applicability, including in product development and supply chain risk. He says dozens of companies from a range of industries have visited Clemson's lab, and "they all can see a different application of the tool."

—Chris Kanaracus

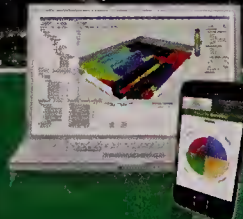
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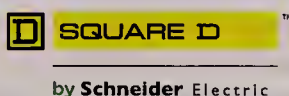
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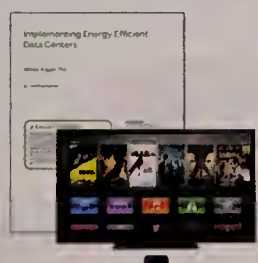
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ANALYST VIEW

How to Get More From the Cloud

Business and IT need to communicate and collaborate to fulfill cloud's potential

BY JAMES STATEN

Forrester surveys show many enterprise IT leaders are embracing cloud services—especially software as a service—but many still prefer internal IT deployments. Sadly, this view is uninformed.

Companies with the most experience with the cloud say it delivers better security, performance, scalability and cost efficiency than traditional IT. But this only happens if a company acknowledges its responsibility in configuring the service to achieve these goals. Bottom line: Business and IT must cooperate to get the most out of the cloud.

Public cloud services do not threaten the role of IT. But to derive the most from cloud, CIOs need hands-on experience. Don't let team members pontificate about the shortfalls of cloud if they don't know firsthand. Assign a team to experiment with cloud platforms and learn what capabilities can be handled by the base configuration.

"A lot of our assumptions about the cloud got us in trouble early on," says an application developer for an entertainment company. "But without these hands-on experiences, we wouldn't be in the market leadership posi-

tion we are in today." It only takes a credit card and time.

Security is a common reason Forrester clients give for not embracing the cloud. Highly regulated industries point to compliance requirements. But there are lots of applications that do not deal with regulated data or processes. Start your experiments there and learn how to bring compliant applications onto these platforms later.

And don't reject cloud for cost reasons when agility may matter more. Our Forrsights surveys show greater agility is the top reason enterprises use cloud services. Often, cloud really can deliver something you can't.

Clouds are highly automated, shared solutions that give autonomous access and control to empowered leaders. Consider starting with a private cloud that can be deployed in-house. If you can't, put your trust in a service provider that offers hosted private cloud solutions. But if a vendor asks, "What kind of cloud can we build specifically for you?," run! To be a cloud service, it must be standardized and delivered the same way to every customer.

James Staten is a VP and principal analyst at Forrester Research.

U.S. Agencies Struggling to Crack Big Data

Big data analytics has the potential to transform the work of government agencies, such as by producing faster and more accurate decisions. But most federal agencies are failing to leverage big data, according to a new study.

These agencies lack the data storage, computational power and trained personnel they need to use big data, according to a study called "The Big Data Gap," conducted by MeriTalk, an online community and research network for government IT.

"Government has a gold mine of data," says Mark Weber, head of the public-sector business at NetApp, which sponsored MeriTalk's report. On average, government agencies store 1.61 petabytes of data, but expect to be storing 2.63 petabytes within the next two years.

However, the study found that only 60 percent of the 151 federal CIOs surveyed say their agency analyzes the data collected, and only 40 percent say their agencies use the data to make strategic decisions.

One roadblock is that there is no agreement about which part of an agency should take the lead in managing big data. MeriTalk found that 42 percent of respondents believe that IT owns the data collected by

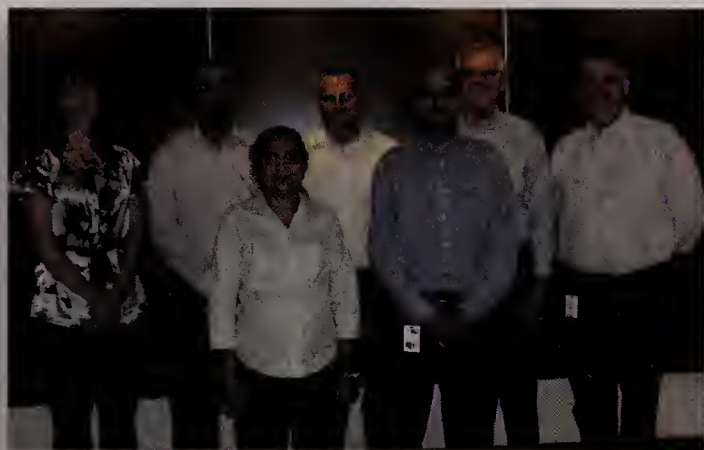
the agencies, 28 percent believe it belongs to the department that generated the data, and 12 percent believe data ownership belongs to the C-suite.

Some agencies say they lack the computational power to handle big data, and 57 percent of respondents say they have at least one data set that has grown too big to work with using current management tools and infrastructure.

In an effort to improve the use of big data, the Obama administration recently announced a Big Data Research and Development Initiative that promises to spend more than \$200 million to tackle key technology and workforce issues.

—Thor Olavsrud

VIEWPOINT



Sally Beauty Global Gets Microsoft Dynamics Makeover

The Sally Beauty Holdings International AX Team

Sally Beauty Holdings, Inc., a specialty retailer of beauty supply products based in Denton, Texas, faced a tangled mess in dealing with international product and service management. CIO Chad Ehmke discusses this competitive environment and how Microsoft Dynamics helps the company manage their business operations, which last year generated \$3.3 billion in sales across more than 16,000 SKUs.

FOR MORE INFORMATION:

Visit www.microsoft.com/dynamics and www.sallybeautyholdings.com.

What makes the global beauty supply industry so unique?

Beauty needs vary from country to country, so we always have to stay on top of local trends. Also, government regulations regarding different products we have for sale among our Sally Beauty Supply and Beauty Systems Group units can vary.

In other respects, we face the same obstacles as many retailers and distributors: Continuing to deliver high-quality service and grow not only our base of customers, but their purchase frequency as well.

Can you share the most challenging part of meeting these demands?

Keeping all of these balls in the air with separate processes and software has proven to be difficult, if not impossible. For instance, each international region is supposed to roll up sales and report to headquarters. That's hard when each country uses a different system and reporting timeframe such as periodic vs. monthly. Success means being able to capitalize on scale and operate a multinational, multicurrency environment with the fewest people.

You recently deployed Microsoft Dynamics to your businesses in Mexico. Can you describe the rollout so far?

We did a total replacement of their systems and plan to do the same in other countries. We've made the decision to use Microsoft Dynamics AX a key part of our international growth strategy. Everybody from the merchants that do the ordering to the warehouses that receive and ship products to the store employees use Microsoft Dynamics AX. All operations are run in a common way, which speeds our decision-making and raises the quality of information flowing to and from

our business units. We expect to see more of those gains as we go forward.

Was Microsoft Dynamics AX difficult to deploy?

No, the model is simple and straightforward, and it has the look and feel of other Microsoft desktop software we use. We took our time gathering requirements and will build on our implementations country to country. For instance, Mexico doesn't run as many promotions as other countries, so we didn't spend as much time testing that function as we will with other implementations. We are definitely following an iterative process. Our CEO was clear: 'We sell shampoo, so let's not overcomplicate this.' Microsoft has delivered the ease of use in Microsoft Dynamics AX for us to follow his advice.

What are your plans for Microsoft Dynamics AX as you roll it out in Europe and elsewhere?

We are excited for all the positive features of Microsoft Dynamics AX 2012, as we currently and have used previous versions of Microsoft Dynamics AX. Already, we see out-of-the-box advantages that won't require custom development. The remote monitoring capabilities will enable us to spot system issues before they impact customers. We are also evaluating some other companion products and modules for potential use in the U.S.

What advice do you have for your peers considering Microsoft Dynamics?

Our experience with the platform and support structure has been fantastic. Just make sure that you have business leaders involved from the very beginning to determine requirements. If you don't ask for input early on, you'll certainly get it after it's too late. ■



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The Gift That Keeps on Giving

Reed Technology has its recruit-and-retain strategy down to a science and shares six lessons it has learned **BY KRISTEN LAMOREAUX**

Finding good talent is a major challenge for IT leaders, and the answer seems to be to recruit and retain. But are any companies doing this really well? Reed Technology is, and it's ranked a best place to work in IT.

"For any business that is healthy or growing in a difficult economy, there's still this persistent resource constraint," says Dave Ballai, CIO and vice president of commercial solutions at Reed Technology, a LexisNexis business unit. "Your choices are: steal from other projects, outsource if time permits, or hire additional positions and try to get them up the curve."

1. Take the long view. Reed puts a lot of effort into developing employees and weighs these choices especially carefully. Though it may be easiest to fill a position with someone who can just do that one job, Ballai is adamant that such shortsightedness is foolish. "It's more important to try and identify people that have potential for movement at least one or two levels up."

2. Explore internal candidates first. Such hires protect the company's culture. "Whenever you add people from the outside, it's the equivalent of creating little asteroid hits on the moon. It doesn't take the moon out of orbit, but it changes the dynamics of the surface," says Ballai. He sees internal hires as a critical part of his algorithm for recruiting and retaining talent because he can further leverage those hires for referrals.

3. Don't skimp on engagement. "The challenge of finding people is one thing, the challenge of integrating them another," says Ballai. "Engagement is part science, part art, and a whole lot of practice." In support of this belief, Reed spends a lot of time each year, from the executive level on down, aligning incentive metrics with performance metrics, Ballai says. "Everyone has key performance objectives, not just to get the job done, but to excel."

The company also has a suite of retention tools to keep employees engaged. While cold, hard cash is always wel-

come, the more expensive commodities—development and time—are also good retention tools.

"We give employees enough latitude in the administration of their job so they can determine how and when to improve themselves," Ballai says. "They can take self-directed learning at a pace they set and on a topic that is relevant to their role."

4. Always follow through. "I'm a big believer in execution. You can say whatever you want—and you do need to get out in front of your employees and tell them what you're going to do for them—but the reality [for them] is in the execution," he says.

In other words: Employees need to trust that you're actually going to do what you say you're going to do.

5. Reward activities you like. Reed offers a broad range of recognition opportunities and activities that bolster attributes that are core to its culture. "We pay employees to go offsite and volunteer services for a day. We have a spirit week where we have different activities every day, culminating in an offsite meeting at the end of the week."

Think it's a bunch of HR hokey? Reed Technology's successful employee retention is key to maintaining its culture. "While recruiting is important, the larger effort is the engagement process as it [relates to] the lifetime of their employment."

6. Learn to love HR. If you think HR stands for "hated resources," you may want to rethink your attitude. Ballai calls HR "one of our most trusted partners" and says the department is incredibly important to recruiting, retaining and engaging talent.

Do the work. Keep it simple. Make apostles of your people and you'll reap the benefit of those good hires for years to come.

Kristen Lamoreaux is president and CEO of Lamoreaux Search, which finds IT professionals for hiring managers.

"Whenever you add people from the outside, it's the equivalent of little asteroid hits on the moon."

—Dave Ballai, CIO,
Reed Technologies

Enterprises See Key Benefits in Deploying Cloud Services with Virtualized Network

The promise of increased cost-efficiency, flexibility and improved scalability continue to drive interest in cloud computing. But moving to the cloud also requires organizations to take a new approach to IT. Full migration to cloud computing is a big step, and certain foundational technologies, such as self-service provisioning, must be in place.

To get a better grasp on today's cloud computing deployments, IDG Research Services surveyed IT decision-makers at enterprise companies. These executives were asked to rate the current state of their cloud implementations and to describe future plans for cloud computing services. They were also queried about their interest in cloud computing services that include a virtualized network.

» State of the cloud: Full speed ahead

The survey confirmed that cloud computing continues to gain momentum. More than one-third of respondents worldwide (38 percent) have implemented cloud in one or more locations, and another 23 percent are pilot-testing cloud projects.

Increased cost-efficiency is the top driver for implementing cloud services at these organizations, followed by flexibility and improved scalability.

Overall, respondents report high levels of satisfaction with their cloud investments. Among those who have implemented or are pilot-testing cloud services, 73 percent said these investments enabled flexibility, and 71 percent said they enabled improved scalability.

As for future cloud plans, an increasing percentage of companies are looking at third-party provisioned infrastructure vs. relying solely on company-owned infrastructure to support cloud computing services. In fact, 88 percent of respondents expect their companies will use only third-party servers or a mix of company-owned and third-party servers going forward.

» Interest in a virtualized network runs high

The survey revealed a high level of interest in cloud

computing services that include a virtualized network. This software-defined network allows for optimal flexibility in capacity control, and immediate changes of network configurations using switching software such as OpenFlow.

Although virtualization is featured mostly as a technology for flexible computing resource utilization, virtualized network services are expected to create more traction. When asked about the most critical network performance issues around cloud implementation, respondents identified capacity limitations (75 percent), downtime (73 percent) and lead-time (73 percent); however, these virtualized network services can provide remedies for these issues, and further expedite cloud adoption among enterprise users.

» Changes are coming

As IDG's survey amply demonstrates, today's enterprises continue to be enthusiastic about cloud computing

» Although virtualization is featured mostly as a technology for flexible computing resource utilization, virtualized network services are expected to create more traction.

services, and they report high levels of satisfaction with the effectiveness of their cloud investments. But some changes are in order.

Enterprises that increasingly rely on cloud computing services will require the ability to expand network bandwidth on demand, unconstrained by the limitations of current networks. This means they will need network configuration changes to expand their capacity. Cloud services embedded with a virtualized network may well prove the surest means to that end. ■

Unintended Exposure

Is your cloud provider revealing remnants of your data?

BY THOR OLAVSRUD

If your organization uses a multi-tenant managed hosting service, or infrastructure-as-a-service (IaaS) cloud, for some or all of your data, and if you aren't following best practices by encrypting that data, you may be inadvertently exposing it.

Last year, information security consultancy Context Information Security was asked by a number of its clients—mostly banks and others with serious security concerns—to determine whether the cloud was safe enough for their computing needs.

Context studied four providers: Amazon, Rackspace, VPS.net and GigeNET Cloud. In two of the four providers, the researcher found a security vulnerability that allowed it to access remnant data left by other customers. The flaw could also be present in many other providers.

"We were looking at the unallocated portions of the disk, and there was data in there," says Michael Jordan, manager of research and development at Context. "And it wasn't our hard disk data."

The data Jordan and his team discovered included some personally identifiable information, including parts of customer databases and elements of system information, such as Linux shadow files containing the system's password hashes.

The information wouldn't be obvious to typical cloud users. To find it, you would first need to know to look for it and, since it was randomly distributed, you would not be able to target a specific customer. But a malicious user who discovered it could harvest whatever unencrypted data it contained.

Jordan wrote a blog post about the discovery with James Forshaw, principal consultant at Context. "There were references to an install of WordPress and a MySQL configuration, even though the virtual server had neither installed. Expecting it to be perhaps just a 'dirty' OS image, a second virtual server was created and tested in the same way. Surprisingly, the data was completely different in this case, exposing fragments of a website's customer database and Apache logs which identified the server the data was coming from," they wrote.

Jordan says the bug stems from how providers provision new virtual servers and allocate storage space. On the

front end, clients creating new virtual servers use the provider's website to select the operating system and amount of storage they require. On the back end, the provider gathers enough disk space to contain the virtual image and then overwrites the beginning of the disk with a pre-configured OS image.

"This means only the start of the disk is filled with initialized data, as the rest of the disk would never be explicitly written to during provisioning," the blog post continues. "If this allocation was being performed using the hosting operating system's file APIs, this would not normally be a problem. The OS would ensure any uninitialized data was

automatically zeroed before being returned to a user application (or in this case, the virtual machine). Clearly in this case it was not using these mechanisms."

Jordan notes that because the problem lies in the way hypervisors are configured, it could affect managed hosting providers in addition to cloud service providers.

Both providers that exhibited this vulnerability—Rackspace and VPS.net—have since reported that they've fixed the problem. Rackspace reportedly worked closely with Context to address the issue, inviting Context researchers to its headquarters and giving them access to its

engineers, executives and processes.

VPS.net uses technology from OnApp, which is also used by at least 250 other cloud service providers. VPS.net told Context that it rolled out a patch that fixed the issue.

Jordan says this issue should not stop companies from using IaaS if there's a strong business need, but he does recommend following best practices when using the cloud.

"If you are a new customer, you have options," he says. "You can ensure your data is encrypted when it's on the hard disk. That way, if someone does get access to a portion of a disk, they'll only see encrypted data."

Jordan also recommends asking cloud providers lots of questions about their processes, including how they provision and deprovision their hypervisors. Additionally, he cautions clients that it's their responsibility to harden virtual servers, and that includes checking any back doors.

"We were looking at the unallocated portions of the disk and there was data there. It wasn't our data."

—Michael Jordan,
Manager of R&D,
Context Information Security

Contact Senior Online Writer Thor Olavsrud at tolavsrud@cio.com.

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They're Just Not That Into You

Watch for clues that your IT outsourcing vendor considers your account more trouble than it's worth **BY STEPHANIE OVERBY**

It can happen to any relationship—one partner falls out of love with the other. While IT service providers and their customers have gotten better at seeking out outsourcing engagements that are likely to work for both parties over the long haul, sometimes partnerships aren't built to last.

Some of the biggest IT service providers have programs set up to extract themselves from relationships in the bottom 10 percent of profitability. "Providers today are much less likely to live with bad deals or money-losing accounts," says Stan Lepeak, KPMG's director of research for advisory services.

But a contract's termination clause may make it prohibitively expensive for the provider to pull out unilaterally. So the vendor may back away from the account in more subtle ways, either to protect its margins or to nudge the customer toward termination—or both.

"If the client's only goal is to squeeze the rates as much as they can and they start playing up to get penalty awards for sub-par performance, they quickly become not only unprofitable, but also a risk for spreading a poor image of that provider's performance into the market," says Phil Fersht, founder of outsourcing analyst firm HfS Research, who estimates that one in five outsourcing customers is in that category. "Their providers quickly start to figure out how to either 'lose' them at renewal to a competitor or simply churn them via an arbitrator."

Here are telltale signs that your IT outsourcing provider wants to dump you.

We need to talk. If a client falls to the bottom 10 percent of a vendor's portfolio, vendors "will not be shy about letting them know," says Steve Martin, partner with outsourcing consultancy Pace Harmon. Contractors will air their concerns through the standard governance process or in executive-level meetings, or they'll try to renegotiate the deal.

Death by change order. Watch out for a provider that gets super picky about what is included in the scope of the contract, says Edward

In some cases, the outsourcer may not even be required to notify the customer of the shift.

Dysfunction on the ground. "When the operational people stop solving problems and start finding constant fault with each other, this is a sure sign that something may be trickling down," says Hansen of Baker and McKenzie.

Executives disappear. If the last time you heard from the provider's top brass was at the contract signing, the relationship is on the rocks.

A vendor may **back away** from the account in subtle ways, either to **protect** its margins or to **nudge** the customer toward termination—or both.

Hansen, partner with law firm Baker and McKenzie. It's "a telltale sign that they've fallen out of love with their customer," explains Pace Harmon's Martin.

No upselling. If the outsourcer isn't trying to get more work, upsell services or develop a long-term road map, chances are the vendor wants out, says KPMG's Lepeak.

Send in the lawyers. Provider counsel may chime in occasionally on even the best deal, but if they're suddenly omnipresent, even on the smallest issues, "you know there's a problem," says Adam Strichman, founder of sourcing consultancy Sanda Partners.

More offshoring. If allowed by the contract, a troubled IT outsourcing provider may replace onshore resources with lower-cost offshore staff, says Martin of Pace Harmon.

"Good provider execs spend a lot of time in the field with the best, largest or highest-priority accounts," says KPMG's Lepeak.

Project delays. IT project interruptions happen in the best circumstances. But repeated delays—particularly around development projects or new technology rollouts—spell trouble. Severe and repeated delays are "a favorite way to 'meet the contract' with half the number of resources required," says Strichman of Sanda Partners. "[The vendor] can always claim that there are unforeseen technical difficulties when what they are really doing is desperately trying to meet profitability targets by broadly cutting resources."

Stephanie Overby is a freelance writer based in Massachusetts.



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When employees, customers or entire business models are under threat, top CIOs fight back with innovative IT

BY KIM S. NASH

CIOs who help create corporate strategy also find themselves responsible for the risks that come with it. These are not the traditional IT-centered aspects of risk management, such as disaster recovery and data security. Rather, CIOs must now manage fundamental corporate risks as serious as outdated business models that threaten to kill the company or faulty processes that could harm employees or customers.

Squashing looming business risks stands out as a key theme among the winners of our annual CIO 100 awards. We honor companies whose projects put IT innovation in the center of their growth strategies. Many of this year's winning projects demonstrate how CIOs lead the way in changing how colleagues work, thereby mitigating profound risks to the company.

"We in this profession have to frame our work in terms of risks and payoffs to the business, not technology projects to check off," says Paul Stamas, vice president of IT at Mohawk Fine Papers, a paper mill that is expanding into digital publishing. Stamas, his CEO and the rest of the company kicked off a corporate transformation two years ago, after they saw a bleak future for Mohawk if it continued to rely on dead-tree paper manufacturing as its only business, he says. In his winning project, Stamas raced to set up an IT infrastructure in the cloud that would let the company experiment with new business models.



In a city faced with rapid growth and tight budgets, **Rob Meikle**, CIO of the City of Brampton, Ontario, is helping the fire department route vehicles more efficiently.

It's easier to identify serious business risks when you see the company as a collection of processes—such as dreaming up new products or interacting with customers, says David Kruzner, co-head of consulting at iGate, a consultancy and outsourcing company. The places where those processes slow down or fall apart point to risks that can rot the very core of the company, Kruzner says.

CIOs are as accountable for making change successful as the CEO or the head of the department where the change is happening, he says. "CIOs are co-owners of change."

To smooth the way, CIOs have to take several steps to make sure colleagues are ready for change. Before any work begins, you should meet with the non-IT peers who are asking for the project and have a brass-tacks talk. Discuss how the company has agreed to spend the money and how everyone's excited about the business case but none of it will materialize until—and this is the brassy part—business leaders commit part of their time, staff and budget to the work. "I've seen CIOs say, 'If I don't have you, I'm not doing it,'" Kruzner says.

This year's CIO 100 winners got those commitments and used IT-led innovation to vanquish various types of business risk.



Losing Customers, Damaging the Corporate Reputation

Remember the ancient days in 2010 when you couldn't get the iPhone on any network other than AT&T? The moment Apple and Verizon finally struck a deal that year, Shankar Arumugavelu, CIO of Verizon Wireless, knew that pent-up demand for a Verizon-compatible version of Apple's phone, set to launch in 2011, might sink his customer order system. He did not want IT problems to hamper Verizon's sales to existing customers, new customers and especially, in competitive spirit, AT&T defectors, he says. He also didn't want to risk damaging Verizon's reputation in these times of angry tweets and intense media coverage of iPhone mania.

The IT group designed the Iconic Phone Launch portal, a Web-based system made to handle an onslaught of orders for popular devices. The team finished the design in October 2010, which left Verizon three months to build, test and deploy it before Apple released the new phone. In addition to high transaction volumes, the portal had to handle pre-orders and back orders, which were unheard of before smash hit phones like the iPhone and Droid Razr, he says.

Another complication: Many AT&T customers switching to Verizon would want to keep their old cell numbers. Arumugavelu made sure the third parties that port phone numbers could connect their systems to the portal. "We had to make sure that didn't become our weakest link" and cost the company customers, he says. "First impression is everything. We take it seriously."

On a regular day, Verizon Wireless sells about 60,000 devices. On the day in February 2011 when the iPhone 4 debuted on Verizon, the system handled peak volumes of 160,000 orders per hour. The portal also cut order-processing time from eight minutes to four. "This was a big event," he chuckles. And a flawless one, made all the sweeter as he watched AT&T's systems falter.

If the portal had started to slow, Verizon was ready with a Plan B, which entailed processing orders without using functions deemed nonessential. For example, if an order was placed by an existing Verizon customer, the system wouldn't bother with real-time credit checks, to save time and decrease network traffic, he says. Instead, under this Plan B, the credit checks would come later, during less-busy hours.

It was critical, Arumugavelu says, that the portal not only address the big business risks that would result from the deluge of orders but also handle the smaller risks that crop up along the way. Building real-time fraud detection, including credit checks, into the ordering process means Verizon can stop iffy transactions before they go through, eliminating the need to revoke orders later, after losing money as bad actors skip out on payments. Such technology-enabled changes in business processes have saved Verizon \$300 million so far, he says.

Verizon Wireless plans to use the portal as the foundation of a new point-of-sale system that works across all its channels—physical stores, website, customer call center and indirect outlets such as other retailers.



Getting Beat by Competitors, Getting Stuck for Multimillion-Dollar Refunds

Boeing predicts that in the next 20 years, the air travel industry will need 34,000 new planes to meet flying demand worldwide. That's potentially \$4.5 trillion worth of planes. But all that business could easily remain out of Boeing's reach, executives at the \$68.7 billion company realized.

Why? Boeing has an order backlog that, if nothing changed in its processes or technology, would take seven years to fill. Delays in producing the company's vaunted Dreamliner, for example, have already cost Boeing millions. One customer, Air India, ordered 27 Dreamliners in 2006 and received the first one just this June, three years late. The airline demanded up to \$1 billion in compensation for its trouble; Boeing offered \$145 million. The companies recently agreed on an undisclosed sum.

Simply put, Boeing has to get its factories working faster, says CIO Kim Hammonds, "for Boeing to realize its potential in the marketplace."

Before Hammonds thought about technology changes, she worked with non-IT leaders to figure out how to improve the workflow by making changes in the engineering, manufacturing, quality-assessment and supply-chain processes. Each of these monster systems involves hundreds of applications. To focus the evaluation, Hammonds' team looked at how individual people did their jobs daily to see where the existing technology helped or hurt.

A mechanic on the shop floor trying to open a set of plans might have to wait 10 seconds to see a digital 3-D drawing and its associated documents, which tell him what parts are needed to build the object the illustration shows. Lots of small waits add up to slow manufacturing, she says. But Boeing needs big changes, too, or it won't achieve the production rates it needs. Right now, the company makes 3.5 Dreamliners a month, but it

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Paul Stamas, VP of IT at Mohawk Fine Papers, says that he and his staff "are business process orchestrators" helping the company modernize its business model.

expects to build 10 a month in 2014, Hammonds says.

To get there, manufacturing, engineering, quality management and supply chain applications were upgraded, and the interfaces between the systems were overhauled to simplify processes such as ordering parts, updating contracts and scheduling plane production. In all, Boeing rolled out 35 new applications, enhanced 100 others and tweaked 50 interfaces. The project is one of the largest in Boeing's history, with more than 500,000 man-hours spent on it.

Stepping up Dreamliner production is just part of Boeing's larger goal of increasing manufacturing rates by 40 percent within the next three years. That will take years off its backlog and make room for new orders, Hammonds says. "We needed to do this."



Death, Environmental Damage, Financial Losses

Jim Noble, senior vice president of IT at Talisman Energy, "watched with horror" as the BP oil spill unfolded in the Gulf of Mexico in 2010. He had left BP two months before the explosion at BP's drilling site, which killed 11 people and released nearly 5 million barrels of oil.

Noble doesn't know exactly what went wrong for BP, but he takes the oil industry's inherent risks to heart. "In our business, we want people to go home at night safe and sound. You don't have that if you're working at a hedge fund or in retail."

So Talisman built a system designed to reduce the risks it faces. It can cost up to \$100 million to put together a deep-water drilling expedition and \$1 million a day to run it, but only about

VIEWPOINT

**Brian Gammage**CHIEF MARKET TECHNOLOGIST,
VMWARE**Doug Hart**TECHNOLOGIST AND ARCHITECT,
CLIENT VIRTUALIZATION,
HP

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VMware and Hewlett-Packard team up on out-of-the box solution for small and midsize businesses

Because of client virtualization's ability to lower costs and streamline management, it has become a favorite of enterprise IT. But until now many small and midsize (SMB) businesses have lacked the expertise to embrace this sometimes challenging technology. Now HP and VMware are teaming to deliver client virtualization to SMBs as an integrated end-to-end solution. We recently spoke with VMware Chief Market Technologist Brian Gammage and HP Client Virtualization Technologist and Architect Doug Hart, who explained the VMware/HP approach.

The need to support all devices, used any-time and anywhere, poses problems for IT. How does this solution help SMBs make the most of the increasingly popular mobile and remote work environment?

Doug Hart: Our focus is to provide the best infrastructure for deploying CV environments. And in combination with our partners' software solution stack, we address BYOD. By taking a partnership approach, we are able to provide support for advanced graphics protocols such as PCoIP [PC over Internet Protocol] that can be leveraged to deliver a better user experience. In

"Our collaboration on client virtualization guarantees a solution to mobility, BYOD and efficiency needs that is quick to deploy and easy to use."

IT is continually asked to do more with less, especially at SMBs. How does the collaborative effort between HP and VMware help IT meet these growing demands?

Brian Gammage: We are giving companies with fewer users easy and low-cost access to the same centralization and automation benefits virtual desktops already deliver to larger global organizations. By significantly lowering the cost of entry and the complexity of deployment, we've made sure SMBs can rapidly achieve the scalable efficiencies of desktop virtualization.

We realize that most SMBs don't have large IT departments with deep specialist skills in the areas required for integrating and building end-to-end IT solutions. Instead, they need technology that delivers results straight out of the box. Our collaboration on CV [client virtualization] guarantees a solution for meeting mobility, BYOD [bring your own device] and efficiency needs that is quick to deploy and easy to use. We do all the work of integration and building, so the customers don't have to. For SMBs, this means that it just works—and works well. They can focus on their business, not ours.

addition to the best infrastructure, our goal is to deliver the best solutions for CV deployment.

By leveraging VMware View, we can take existing PC software and make it accessible via a window on almost any mobile device. The PC software runs on an HP server, sited wherever the SMB chooses, and HP networking technology delivers high-performance access to the user. Not only is it possible to access existing applications remotely from different mobile devices, but since the PC software runs centrally, there is less to support than with physical PCs.

Many SMBs are looking to the cloud as a means of competing with larger rivals. How can the HP/VMware solution help?

Gammage: We see this as a crucial first step on the journey to the cloud for end user computing. Since everything runs on HP industry-standard servers, virtual desktops running in different locations can be very similar and can even be moved. We built our solution on a layer of infrastructure that is as flexible as the user requires and can be easily exploited to build hybrid environments in which some, all or even none of the physical building blocks are owned or onsite.

one in three expeditions turns up valuable oil. Refining the process of building and running a successful rig will save money and lives, he says.

Noble's team pieced together a system that tells Talisman more than it ever knew about what's happening at a deep-water drilling site, almost as soon as it happens.

Rigs erected 150 miles offshore plunge a mile through the ocean and another mile or more into the sea floor. Weather and other atmospheric changes, problems with equipment or a lack of information can lead to poor decision-making. "Standing on one of these drilling rigs with 30-foot waves breaking over you, it's dark and noisy," he says. "You're just not giving the job your full, undivided attention. That's when people make mistakes."

Talisman enabled high-bandwidth communications at the drill pipe to transmit thousands of megabits of data per second from sensors on the drill bit, including temperature, pressure, speed and depth. To avoid the half-second or one-second latency of satellites, Talisman is implementing a technique used by the military to bounce microwave signals off the troposphere, a moist layer of the Earth's atmosphere.

Talisman also built a real-time dashboard to bring together geoscience, drilling and engineering data that had previously remained in three separate systems. Visualizations of the data show scientists (warm and dry at Talisman's headquarters) what's happening at the wells so they can advise the crews to adjust the drilling equipment accordingly. They can guide the drill bit to avoid obstacles as it digs, for example, and respond to emergencies faster and with more accurate information.

Before the new processes and technology were in place, Talisman experts could make drilling decisions every five to 15 minutes. Now adjustments can be made every second, he says.

Talisman has been able to reduce staffing on the rigs, as well as the number of times employees had to perform "interventions" on the machinery to fix or avoid a problem. Lost-time incidents, where work is stopped or slowed because of safety issues, are down. No one wants another BP disaster. "Failure to detect and adequately respond to these changing conditions can cost hundreds of millions to billions [of dollars] and, unfortunately, people's lives," he says. "[We] want to do something to avoid it ever happening again."



Risk Failing Compliance Audits, Catastrophic Patient Treatment Delays

Last year the emergency department of the Christiana Care Health System handled 172,000 patient visits, including 3,841 traumas—incidents where a person's limbs, organs or life itself are at risk. Information about what happens to each patient must be recorded to comply with regulations, to keep accreditations and to be available in case of audits, internal peer reviews or legal requests. Until recently, a good chunk of that work was done by sharp-eyed staff with pen and paper.

"We have to frame our work in terms of risks and payoffs to the business, not technology projects."

—Paul Stamas, VP of IT, Mohawk Fine Papers

For example, a clinician treating an emergency room patient often wants to consult with a neurologist, cardiologist or other specialist on call. The clinician would have to take a minute or two to find a clerk to make the call. The clerk would do so, then log the calls on paper, noting the time of the outbound call and of the response. About 150,000 calls to and from clerks are logged per year. It wasn't possible to do any systematic analysis of this paper information, and gathering data for audits and certification requirements or to respond to complaints or lawsuits was "a huge burden. [The paper logs] were stored on pallets in an Iron Mountain warehouse that required forklifts to pull the books for people to review," says Randall Gaboriault, CIO. "It would take hours and hours to go over logs."

When a trauma patient enters the emergency department, a nurse must document which areas of the body each clinician treats. Christiana nurses had traditionally done this by observing and writing the information down. They had to know people, even behind their surgical masks, or ask who was who amid the chaos. Such documentation is necessary not only for internal performance monitoring and legal issues but also to qualify for accreditation as a level one—the highest level—trauma center.

Gaboriault led a project to automate and streamline these processes with workflow and collaboration applications, combined with interactive visualization software. Now, an emergency clinician signs in to a workflow application on a computer right in the exam room and requests, via the software, that the clerk contact a specialist. The clerk does, and logs the information electronically from his desk. The clinician doesn't have to leave the patient to find the clerk.

In trauma cases, each clinician swipes his smart badge at a computer outside the trauma bay. The application accesses the hospital's human resources database to identify him and to populate an interactive display. While there, he can touch the monitor to claim an area of the patient's body to treat, such as the airway or left chest. The doctor enters the bay, where he can see another screen displaying statistics and data about the patient. The display also shows names and pictures of the clinicians at each area of the patient's body, for everyone's reference.

"They have all the same information at the same time," Gaboriault says. The treatment bay is quieter and the documentation nurse isn't confused. "Even if it's seconds of friction out of the process, it speeds up the time between knowledge and action."

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Excessive Downtime Costs, Deficient Patient Care, Data Errors

In 2008, the Cancer Treatment Centers of America (CTCA) did something many health-care organizations struggle to do: implemented a full electronic health record system. Having gone fully computerized, patient care was now dependent on 100 percent IT uptime—a nirvana not achieved, says Chad Eckes, CIO of the CTCA, which runs a network of five hospitals across the United States.

The electronic health record system and other software require weekly updates and patches, which meant that the system had a planned downtime of four hours each week. Unplanned downtime last year averaged an additional 43 minutes per year. When the system was unavailable, up to 3,000 doctors, nurses and other staff members had to use workarounds, Eckes says.

Patient safety was not at risk, he says; read-only copies of patient records were available locally to the medical staff during these periods, which were usually 11:00 p.m. to 3:00 a.m. But clinicians had to write out the necessary information and enter it later. They also were unable to care for as many patients during the downtime as they could when the systems were up, necessitating extra staffing. Downtime, Eckes says, “is inexcusable in a world where you have applications impacting patient care.”

Re-keying data always heightens the risk of errors, he says. Plus, using paper, even for a short time, disrupts the workflow of the staff, especially for younger clinicians who may have never worked in a paper world.

Eckes built a private cloud in a backup data center that mirrors the virtualized servers and 342 applications in its primary data center. The systems communicate with each other continuously, moving the work of physicians, nurses and other users between production environments without disruption, he says. The CIO likes to perform a dramatic test where he cuts power to a full rack of equipment and the SAN that runs the electronic health record software and watches the system self-heal by bouncing to the backup cloud. In the 18 months since the system launched, the company has had no downtime in the data center. “The end user sees nothing. Not a pause or blip. The response time is sub-second.”



Injury, Death, Property Damage

Brampton, Ontario, is the second-fastest-growing city in Canada, but the city budget isn't keeping up, putting the fire department in a tough situation. It has to serve more citizens, who are packed more densely, while it controls costs. This risk caused by this familiar “do more with less” demand becomes more intense when you consider that human safety is at stake.

In 1995, for example, Brampton's fire department handled 7,597 emergencies, including fires, car accidents and hazardous

materials incidents. Last year it was 17,607—more than double.

“It's not sustainable to continue to add staff and vehicles as the city grows. We have to look at how to sustain growth with fiscal pressures,” says Rob Meikle, CIO of the City of Brampton.

The city's IT group worked closely with the fire department to determine how to route vehicles more efficiently, to save time and improve service. But several factors complicate routing.

In a fast-growing city, traffic patterns continuously change, which disrupts time-tested fire truck routes. Also, the fire department used to dispatch trucks from the station nearest the location of the incident, even though a truck and crew that was already out of the station may have been closer. There was no electronic system to track that information. Staff members used radio to share information about their whereabouts and the details of the emergency.

For Matt Pegg, deputy fire chief, the goal is to put responders on the scene as fast as possible, equipped with as much information as possible. But any new tools, systems or procedures had to be impeccably reliable, Pegg says. “In the world of fire, the only thing worse than not giving me a tool I need is giving me a tool I can't rely upon.”

IT worked with the fire department to build a new system where trucks carry location-based sensors so the routing software can find the nearest fire truck, rather than just the nearest station.

Next, the team had to deal with the physical risks of navigating heavier and less-predictable traffic. Before, signals would detect the flashing lights of an approaching truck and change to red, to stop traffic and let the truck weave through the intersection. As the city grew, however, more buildings went up, blocking the trucks' flashing lights. Now, GPS data from trucks is transmitted to the system that controls traffic signals by a new data network, which the city was already installing for smart buses and a rapid transit system. That happens as soon as a truck is dispatched. The signals then immediately start to “pre-condition” intersections, meaning they adjust green, yellow and red lights to clear traffic from the truck's route, Pegg says, and ensure fire vehicles always have a green light.

“In the past, we were required to stop at a red light, then proceed through it. That's dangerous,” he explains. “This is an efficient and fast response to the specific emergency but also improves public safety along the way.”



The Wrong Business Model at the Wrong Time

As its name suggests, Mohawk Fine Papers is—or was (we'll get to that)—a maker of high-end specialty paper. Fancy stationery, book covers and the like. But the 81-year-old, family-owned business faces a triumvirate of forces gathering strength in the past few years and threatening to put the company out of business: the shift from paper to online publishing, the environmental push to conserve trees, and global competitors that offer cheaper printing services.

“Our survival was at stake,” says Paul Stamas, vice president of IT at the \$300 million Mohawk.

Senior executives set a goal two years ago to become an

CIOs are co-owners of change.

—David Kruzner, Co-Head of Consulting, iGate

agile company that could create new products and services to embrace, rather than fight, the disruptive trends, Stamas says.

"This was no IT-only exercise, Stamas says. "The CEO issued a call to action to the rest of the company [saying] 'We have to change or we won't survive.'"

Mohawk closed one plant and stopped making low-margin products such as brochure paper, outsourcing that work to Asian companies. It started making envelopes to go with the paper product lines it had kept. It also started selling products directly to consumers and businesses, cutting out some of the distributors it had previously used. The company wanted to be closer to its ultimate customers to sense trends more quickly, Stamas says.

Mohawk also got into a new business: online photo sharing.

It now runs a site that offers printing services for calendars and books. "We're driving demand for our paper but creating an entirely new business," Stamas says. It also bought a plastics company so it could sell magnets and signs customized with photos—products with higher profit margins than paper.

In April, Mohawk felt confident enough in its new endeavors to drop the "fine papers" portion of its name from marketing materials and other corporate communications.

With an IT staff of just five people, cloud computing has enabled Mohawk to experiment with new business ideas and partnerships, then extricate itself from them quickly if necessary, Stamas says. For example, the company learned its envelope business from six smaller manufacturers, connecting with them via the cloud. Mohawk combines Amazon's cloud with its own EDI, warehouse management and financial systems. When Mohawk was ready to start making its own envelopes, it dropped the partners with little impact on its internal IT systems, he says.

Mohawk is now smaller and makes fewer products but is twice as profitable as it's ever has been, Stamas says. He and his staff, he says, "are business process orchestrators. I'm not thinking much about the technology." **CIO**

Senior Editor Kim S. Nash can be reached at knosh@cio.com. Read her blog, Strategic CIO, at <http://blogs.cio.com/blog/strategic-cio>.

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Dig into our online database of extraordinary IT projects that earned **CIO 100** recognition

Many innovative IT projects that won CIO 100 honors are profiled in articles throughout this issue, but you can see the full array of projects in our sortable database online:

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There you can select a company name and get a complete description of the organization's winning project.

How did we choose the CIO 100?

We had a lot of help from 36 judges, which include former CIOs, academic experts and independent consultants. The judges evaluated the applications according to two criteria: innovation and business value. Applications that received a score of 15 or higher (out of a possible 20) were selected for a second round of scrutiny by CIO magazine editors.

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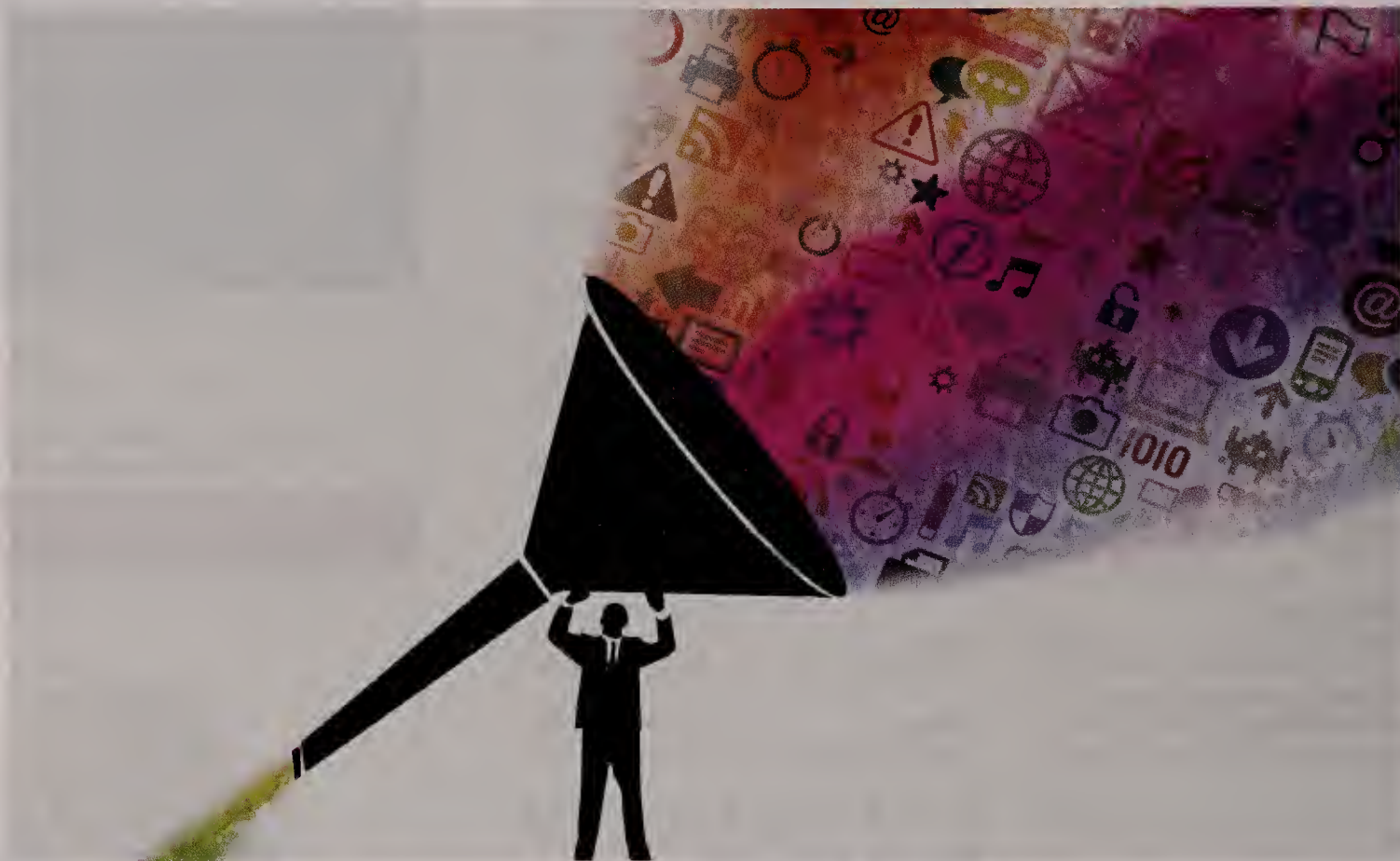
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Rationalize This

SCENARIO OneAmerica Financial Partners operates under a divisional alignment. IT is consolidated at the corporate level, but in some cases each business unit uses a different system to perform the same functions, such as document management and policy administration. Since I arrived in 2010, one of my goals has been to reduce complexity, which allows greater responsiveness to business needs and cuts costs.

We recently engaged a consulting group to perform a portfolio rationalization study that will help us develop a list of high-value opportunities for improved functionality to present to our executive council as part of our 2013 plan. The ultimate goal is a multiyear initiative that will generate savings in the initial phase, and then use those savings to fund future modernization efforts.

One of the big challenges will be balancing our modernization efforts with our work on initiatives that support sales, marketing and operations, and improved enterprise functionality, such as consolidating data for better decisions through business intelligence and analytics. Historically, these modernization efforts have been squeezed out, and we need to find a better balance between these competing priorities. ►►►

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ILLUSTRATION BY ANASTASIA VASILAKIS

VIEWPOINT



James Stikeleather

EXECUTIVE STRATEGIST,
CHIEF INNOVATION OFFICER,
DELL SERVICES

For more than 30 years, Jim Stikeleather has designed, developed and implemented award-winning information and communications technologies that help businesses and institutions succeed. At Dell, Stikeleather leads a team of information technology and business experts who evaluate new technologies, business models and processes to address evolving business, economic and social trends for the company and customers. In addition to speaking, consulting, and writing, Stikeleather holds two patents.

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Cost Cutting in a Turbulent Economy

How "good" cuts breed growth and innovation

A recent Harvard Business Review study reveals that a new group of leaders has taken advantage of the economic downturn to improve business processes. Rather than merely cutting costs, they have taken a strategic, integrated approach to make operations more efficient and effective. Dell's Executive Strategist and Chief Innovation Officer Jim Stikeleather comments on how these choices will play out in the future.

The Harvard Business Review report refers to "good" and "bad" cost cutting. What's the difference?

Good costs push the value creation process towards fulfilling a goal. Bad costs don't do anything directly to create value or to further a value proposition to stakeholders. Labor, for example, is often a significant component in a value-creation stream. Simply reducing labor by cutting back or hiring contractors dilutes the institutional memory of the organization, the sense of ownership and the value that's created for customers. Conversely, using mechanisms like outsourcing and temporary labor in parts of the organization that aren't directly part of the value-creation stream is good, because it doesn't have the same impact.

How are companies that practiced bad cost cutting during the economic downturn ill-prepared for the future?

Let's say you've outsourced some of your value creation capability—your systems analysis and requirements-gathering people. When the economy turns around, you'll be competing for those capabilities, and since they're part of your overall value proposition, your costs will increase. You've also lost the institutional memory that's embedded within those roles and will have to pay to re-acquire or redevelop it. Another issue is lack of a holistic view of the cost cutting. When you optimize subsystems at the cost of the overall system, you cripple or damage it. But you don't know that there are problems until you put stress on the system, be it your supply chain, your distribution

channel, your IT department or your business as a whole. In the end it might just collapse. You see that a lot in economic upturns. The companies that were successful in the past and cut a lot of costs to get through the trough are unable to take advantage of the upturn when it comes.

Those balancing a mix of cost lowering and investment had better results than all-out investors. How do you explain this?

Balancers take a systemic view of cost cutting. They identify the right things to do; those things that will either create value for customers, or are legal or regulatory requirements. For everything else they find someone else to do it for them, and assuming they find the right someone, get all the benefits of being someone's customer. That gives the balancers a couple of advantages. It allows them to focus on things that truly create value, and it enables them to scale. The balancers are then using the savings to invest in higher value-added activities. The investors, while they're investing, aren't getting the cost relief they would get if they stopped doing the things they shouldn't be doing and became more efficient at the things they should be doing.

How does efficiency enable businesses to embrace growth and innovation?

Most managers forget that the starting point for efficiency is efficacy. If you first identify the right things to do and don't do anything else, you not only reduce your costs but free up resources to support growth and innovation. Now you can focus on doing the right things in the right way. It is about finding the balance between the old imperative of efficiency at scale (which still needs to be maintained) with the new imperative of efficacy in the moment. That is, finding a way to maintain discipline and ensure control, conformance and consistency without sacrificing adaptability with strategic inertia, frustrated innovation and squandered opportunities and initiative. ■

►►► **Rationalization** Continued from Page 42

RANDY FOX, CIO, GE HEALTHCARE

FIND WAYS TO AFFECT THE BALANCE SHEET



ADVICE The real value of IT simplification is in streamlining business processes in places where you can affect the balance sheet. To sell this to your peers, you have to find their pain points and identify which ones need fixing and will deliver business value.

Sometimes you can see these opportunities from within IT, but you and your team really need to consult with your colleagues before choosing problems to tackle. Rather than asking about systems or technology, ask about the issues they're having and what tasks they find difficult to perform. If IT system rationalization is not connected to the issues they really care about, then it will fail.

I have worked in many GE businesses and have had these discussions in each one. It always starts with the CEO and the CFO, but after those conversations, the talks differ according to the nature of the business. For example, when I was working in the Energy Services department, their focal points were supply chain and engineering. Find out where you can make the most impact.

I've also found that it's easy to get carried away. System duplication is not always bad—eliminating redundancy at any cost can foster resentment. Rationalization is disruptive, so it's critical to make point-by-point decisions to figure out which changes will offer the biggest benefit to the business.

**FREDERIC CHANFRAU, SVP OF I.T. REGIONS,
SCHNEIDER ELECTRIC**

ESTABLISH MUTUAL EXPECTATIONS OF VALUE



ADVICE Before even starting to create a global portfolio management approach, you must have a network of people who will be the voice of the business to IT, and vice versa. They are there to put the oil in the engine, so to speak, and serve as a necessary foundation for determining the needs and priorities that guide rationalization. This strategy is particularly helpful for identifying areas where there is duplication of effort, which is a more important issue than duplication of systems.

Having these relationships and building greater understanding on both sides will allow you to realistically predict—and then measure the effectiveness of—the benefits that can be expected from any rationalization effort. Many organizations do not commit to asking those questions about whether the predicted value materialized at the end of the process. I have found that when people know questions will be asked, they are much more frank up front about what they expect. This then keeps IT from being alone in bearing the burden of proving value, because the business was involved at the start in determining what the results should be.

As for how to include modernization in this effort, I would suggest separating out part of the investment portfolio specifically for IT infrastructure modernization. If the modernization work is tied into a business effort, it will fall behind in favor of specific process improvements. However, keep an eye out for opportunities to embed systems upgrades in process changes and be sure to include those costs in the project plans.

TAKE Note

Attract High Performers

CALL IN Many CIOs are interested in hiring the best and brightest young people so the company can make use of their talents and fresh perspectives. But how can your organization effectively compete for the top talent entering the IT job market, and how can you keep them interested and satisfied once you've got them? On August 24, this 30-minute webcast (produced by CIO Executive Council's Youth in IT community of practice) will feature a panel of high-performing twentysomethings who will candidly share their views on topics such as job descriptions, what makes work interesting and meaningful, and their expectations for advancement. council.cio.com/web812

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DOWNLOAD Internship programs can add significant value to your IT organization and company, even beyond the good they do for the individuals—ideally, they will create a pipeline feeding you your company's future leaders. On this recorded webcast from the Council's Youth in IT community of practice, leaders from Federated Investors and Dow Jones provided an overview of their IT internship programs, shared specifics about how the programs work, and explained the metrics used to gauge program and participant success. council.cio.com/dl812



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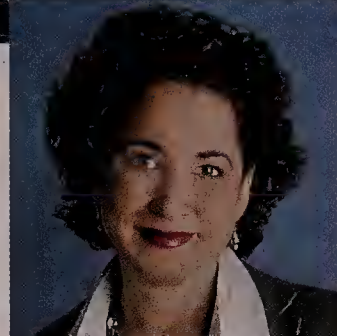
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Overcoming the Talent Deficit

To meet growing business needs, CIOs must make the most of the team they have **BY MARTHA HELLER**

Like it or not, we are in the midst of yet another technology talent crisis, and when your CEO is demanding more out of your team, you really need good people. But here's the paradox: The talent pipeline is being squeezed at both ends. Computer science enrollments are down, and an entire generation of experienced technologists is ready to retire.

Recruiting from this limited pool requires money, time and effort. Especially if you are in a midsize company, you'd be better off making the most of the team you have. Here, three CIOs share their successes.

Reed Sheard is CIO of Westmont College in Santa Barbara, Calif. While Oprah Winfrey certainly enjoys her home nearby, Sheard finds it difficult to recruit talent to the expensive area.

Refocus your team. When Sheard started at Westmont, his unreliable infrastructure demanded tremendous effort to maintain. By moving services to the cloud, he reclaimed precious hours. Case in point: one person used to spend 30 hours a week managing some 40 handheld devices for campus VIPs. With wireless syncing, the team now spends one hour a week managing more than 1,500 devices.

Grow your own. Westmont's plan to deliver many services on mobile devices requires new skills. Rather than recruit a mobile developer, Sheard selected someone in the public affairs office with the acumen for the job. "This person was not in IT, but I sent him to Big Nerd Ranch for iOS development," he says. "He is now indispensable."

Get your project managers certified. Bill Brown joined Avid as CIO in 2011 and found a team that was having trouble consistently delivering successful projects. So Brown signed his project managers up for Project Management Professional certification and mandated that all IT employees had to take at least one certification course. Project success rate has climbed to 93 percent.

Develop your leaders. Brown is also taking his 15 global IT managers through a leadership program that

stresses competencies such as delegating, and acting with honor and character. "Whether you are a manager in Singapore or San Diego, you are all learning these competencies together," he says.

Brown feels the key to the success of the program is in giving it constant care and feeding, and reinforcing the message to the team. "Project management and leadership training are part of the team's goals and objectives; we string it through everything," he says.

At CareFirst's Service Benefit Plan Administrative Services Corporation, many of the IT staff have been with the company for more than 30 years. The issues that concern CIO Usha Nakhasi are, "How do I retain all of that knowledge when my people retire and how do I update their skills in the meantime?"

Use the buddy system. When Nakhasi hires new people, she pairs them with her veteran workers. The veterans document what's in their head as they train the new hires, who in return teach the more senior staff new skills. This fails unless both parties are committed, she notes.

"If the older person believes they are documenting their way out of a job, it won't work. They have to see the mutual benefit."

Customize onsite training. The company's IT group is also keeping technical training in-house after trying external solutions. "You can't create change when you teach Java to only two people at a time," says Nakhasi, who instead hired a firm to customize onsite training on specific topics. The challenge? "People would return from class, and with nothing relevant to work on at the moment, they would forget what they learned." So, Nakhasi is building a lab where her team can practice. "This way, if it breaks, it's not the end of the world," she says.

Martha Heller is president of executive recruiting firm Heller Search Associates and author of the upcoming book *The CIO Paradox*. Follow her on Twitter: twitter.com/marthaheller.

"Whether you are a manager in Singapore or San Diego, you are all learning these competencies together."

-Bill Brown, CIO, Avid

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Joint Innovation

This 2012 CIO 100 Award-winning strategy gets everyone in on space exploration **BY JAMES RINALDI**



When I joined NASA's Jet Propulsion Laboratory (JPL) seven years ago, I recognized it as a truly unique environment. Collaboration is a way of life here. I knew I had to make IT part of that culture.

We're working on building an IT organization that could affect the lab's ability to perform the scientific mission set for us by the country. We organized with a very talented team—including Deputy CIO Mag Powell-Meeks and my CTO, Tom Soderstrom—and we set out to change what “IT” stood for from “information technology” to “innovate together.” Our goal was to have consumers of IT have a say in how they receive services and technology.

The innovating together idea is about continuously identifying technologies, evaluating their relevance, and sharing prototypes with end users. It's designed to transform IT from something that is done to you into something that we do together.

To start this transformation, we first had to do some education. The JPL's missions are technical and complicated, and the folks in IT understand that. We needed others to be similarly understanding of the complexity of what IT does before we could determine what technologies and solutions are best for the lab. Users and industry partners need to be involved at every stage to make this approach work.

We emphasized that the collaborative spirit can be just as useful in finding IT solutions as it is in designing and building spacecraft and scientific instruments. We probably started with some of the hardest groups to convince, simply because they are trained to quickly identify obstacles, so we needed proofs of concept.

But we reached out to everyone from the start. We said to them, “Help us design a better solution by working with

us from the beginning, rather than reacting to us at the end.”

With users from many parts of the lab involved, we can now rapidly prototype emerging technologies to meet mission needs in an internal, trusted environment. One example is the Aquarius mission, which is focused on climate studies. By working as a team from the start, we were able to quickly determine more efficient ways for users to col-

laborate within NASA and with their partners at the Space Agency of Argentina.

We're building on the idea of consumerization of IT—where users are finding and testing solutions they like on their own—but making it part of an enterprise approach. By embracing this potentially disruptive trend, we're able to look at all the pieces to determine what should be done. Because users within the lab represent a broad selection of workers here, people understand why decisions are being made. It's no longer about mission groups going off on their own to find their

own answers, or having to bow to IT's strictures.

We in the IT group are becoming much more internal consultants. Our job under this new innovate together culture is to get the most out of what the technology market is providing through our expertise and our relationships with our users. I feel this is the best time to be in IT, and tomorrow is going to be even better.

James Rinaldi is CIO at NASA's Jet Propulsion Laboratory—a center managed by the California Institute of Technology—and a member of the CIO Executive Council.



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CIO is published in the U.S. as well as in:

Argentina, CIO Cono Sur

<http://conosur.cio.com>

Australia, CIO Australia

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Editorial, Advertising and Business Offices:

CXO Media Inc.,
492 Old Connecticut Path, P.O. Box
9208, Framingham, MA 01701-
9208, 508 872-0080.

CIO (ISSN 0894-9301) is published monthly, with additional issues in May, June, September, October and November by CXO Media Inc. Periodicals postage paid at Framingham, MA, and at additional mailing offices. Canada Publications Mail Agreement Number PM40063731. CANADIAN POSTMASTER: Please return undeliverable copy to P.O. Box 1632, Windsor, ON N9A 7C9.

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Change of Address: Please go to <http://www.cio.com/subscription-services> and follow the online instructions.

Postmaster: Send change of address to CIO, P.O. Box 489, Northbrook, IL 60065-9816. Printed in the U.S.A.

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Clicking the Habit



"One of the most difficult things to do is change behavior," says Marino Bertapelle, director of global commercial development for Chantix, Pfizer's smoking-cessation drug. To help patients quit smoking and possibly drive sales of Chantix, Pfizer developed a free mobile app, Plan Q, that won a 2012 CIO 100 award. "We're trying to replicate [the social experience of smoking] without going to the loading dock," says Rick Close, senior director of primary care business technology at Pfizer. The app works like a virtual support group—a community of smokers offers each other encouragement. But to really keep users focused on quitting, the app exploits another dependency—mobile device obsession—and sends alerts with inspirational messages and progress updates, such as a tally of smoke-free days and money saved. Pfizer has no plans to sell the app for profit, but notes that in the general population, only 7 percent of smokers get a prescription to quit, whereas in the pilot, 25 percent of those using Plan Q asked for help from a doctor.

—Lauren Brousell

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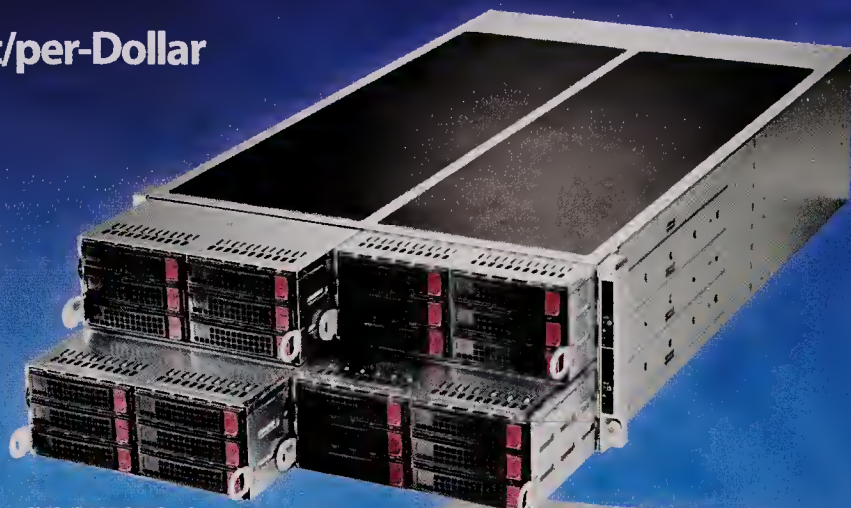
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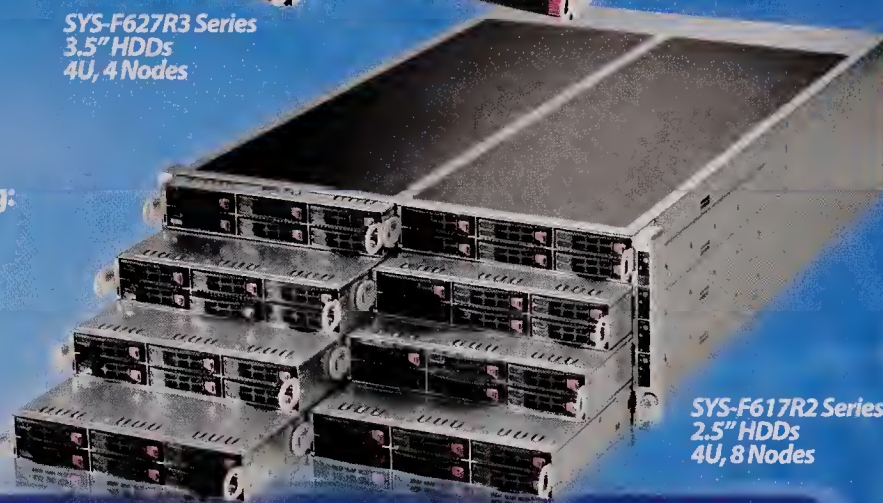
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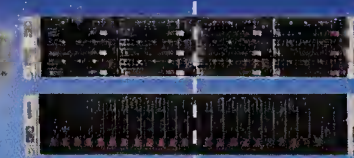
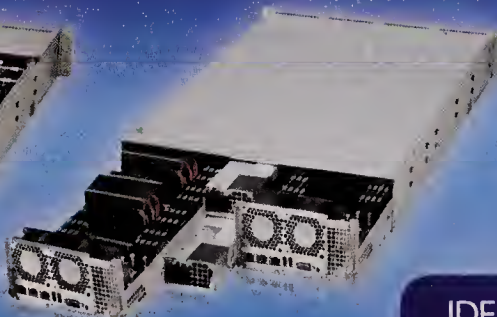
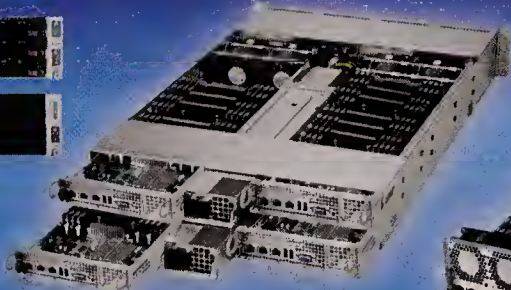
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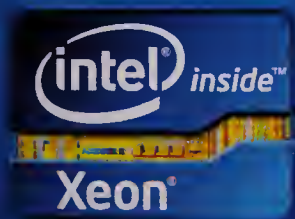


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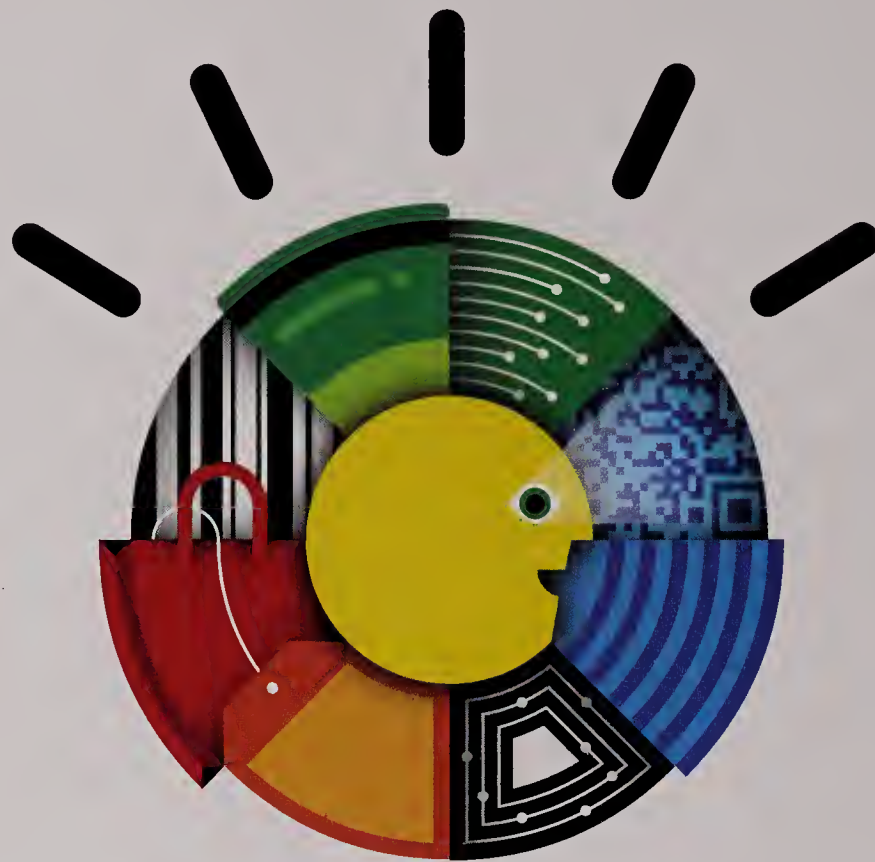
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WELCOME TO THE ERA OF THE

The companies of a smarter planet are asking questions about how to take advantage of the unprecedented streams of information generated by today's customers. These questions are increasingly falling on the shoulders of the chief marketing officer. Our study of 1,700 CMOs confirmed that marketers believe their profession is being transformed by "big data," the proliferation of new mobile devices and the emergence of social media. A new kind of CMO is now adapting to these changes and is reinventing the notion of what marketing can do.



THE BRANDING OF CULTURE.

But the transparency that companies have into consumer patterns is met by increased consumer transparency into companies' actual behavior. The CMO now plays an essential role in aligning the company's values with its brand promise. They are spending more and more time on "who we are" and not just "what we sell," giving their firms a new degree of social intelligence and self-awareness.

Marketers can now use data to shape everything from how brands interact with customers, to the products and services they offer, to the culture of the company itself. By rethinking their profession, CMOs today are bringing more rigor to the ROI of their marketing investments and are proving that marketing can be less obtrusive and more personal, less of a pitch and



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Today, the vast amount of data that customers are generating lets marketers understand them not just as segments, but as actual individuals. Forward-thinking marketers are connecting the universe of transactional, social, service and search data to build new

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levels of customer visibility and understanding—and are then making more precise decisions about whom to reach.

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